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Railway Age

SECOND HALF OF 1924—No. 19 NEW YORK—NOVEMBER 8, 1924—CHICAGO SIXTY-NINTH YEAR

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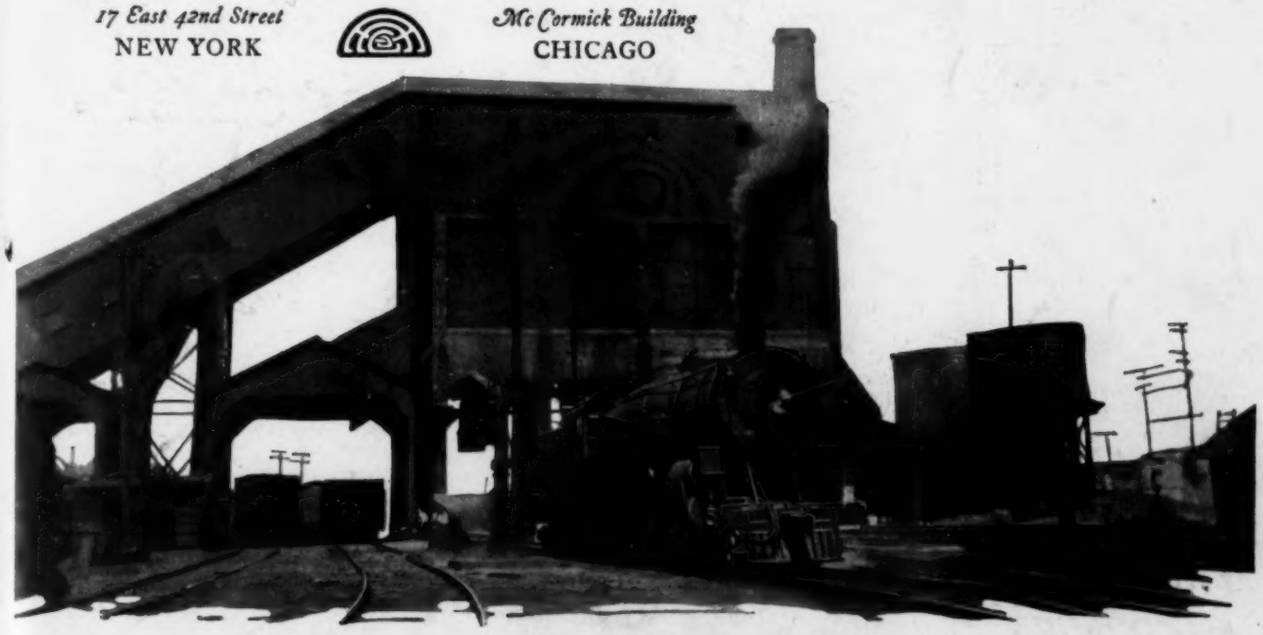

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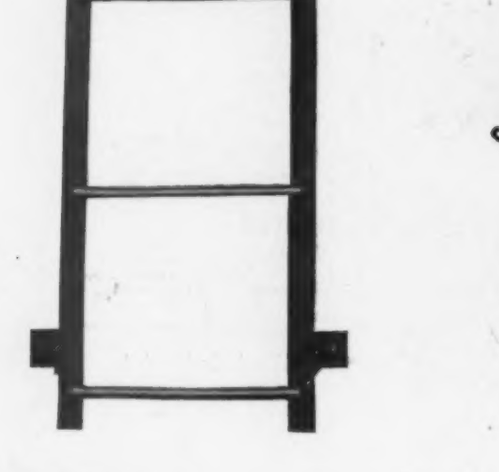

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Volume 77 Number 19

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EDITORIAL

Railway Age

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Government Operation Reactionary

Elsewhere in these pages we publish a statement by Sir William Acworth on the tendency which government-owned railways and public utilities throughout the world are showing in discarding insofar as possible the form of state departments and in imitating the organization of private companies. This statement was prepared by Sir William as a letter to the editor of the London Times, in which journal it appeared on October 21. The letter was written as a criticism of the declaration of the British Labor Party, which has since been defeated at the polls, for "an entirely unified railway and canal system in national ownership and under exclusive public control." This policy, Sir William contends, is not one of progress, but, on the contrary, is quite reactionary—being a movement in the control of public utilities quite opposed to that which is occurring in other enlightened countries. Nations which have had government ownership and government control, while adhering in the main to government ownership, are either leasing their properties to private concerns for purposes of operation or are adopting the form of organization of private corporations insofar as possible. Some places where these changes have occurred are Germany, Austria, Canada and Holland. A similar change has been recommended for New South Wales by a Royal Commission. In other words, government ownership and government operation of railways and public utilities is not a progressive policy; instead it is reactionary in the extreme and directly counter to the course which progress in the administration of railways is unmistakably taking all over the world.

Increasing Track Capacity

The fact that the railroads established a new high record by handling a traffic involving the loading of more than 1,112,000 cars in one week and yet had a reserve of nearly 5,000 serviceable locomotives shows that the carriers as a whole are handling this traffic in longer trains by means of heavier power. The fewer the trains the greater is the track capacity; however, the heavier the train the more important it becomes that train stops be reduced to a minimum. On account of the difficulty of securing capital for fixed property the problem confronting railway officers is to determine just what additional facilities will make possible the greatest increase in track capacity. The use of the form 19 train order, the installation of interlocking plants and the construction of automatic signals are all factors contributing to the prevention of train stops, thereby adding materially to track capacity. The direction of train movements by signal indication on single track, thus eliminating written train orders, is an ideal towards which signaling officers have been working for years. This ideal has been practically accomplished on numerous double track lines. However, the Missouri Pacific is now using a system of controlled manual block signaling that not only controls movements between block offices but also directs movements into and out of intermediate passing tracks. Superiority of trains is abrogated and movements into and out of sidings are controlled by the operators under the direction of the dispatcher. This system is now in service on 20 miles of single track between Leeds, Mo., and Kenneth, Kan., and is being extended 30 miles to Osawatomie, Kan. In the finished installation it is the intention that all passing track switches shall be operated by remote control electric switch machines which will eliminate the necessity for stopping trains when entering or leaving sidings. This system, which promises so much towards the elimination of train-orders and the prevention of many unnecessary train stops, is described elsewhere in this issue of the *Railway Age*. There are not a few roads which might well install such a system on certain divisions and there are many roads that could apply the idea to the signaling of certain grades and the operation of passing track switches where the stopping of trains is difficult. When traffic is heavy the track capacity of a division is often limited by the time required for each train to cover a certain short section. Perhaps a few automatic signals and electric switch machines would solve the problem. It will pay to investigate.

Two Good Exhibits

The railroads were able to present two interesting exhibits this week on the eve of the election. First came the report showing a net railway operating income for September of $116,718,000, which was larger than the roads have earned in any month since the war, although still below what is held to be a fair return. This was followed promptly by the car loading report showing that all previous records for the number of cars loaded with revenue freight had been broken again with a total of 1,112,345 cars. Among those who think that any sum aggregating many millions of dollars is prima facie evidence of a crime of some kind, and those whose self-pity increases whenever they visualize such an amount in the hands of others, the publication of such figures may have intensified the determination to vote for La Follette, whose idea is to keep such large figures from developing anywhere outside the government accounts. But among those capable of seeing in such a showing real indications of the general prosperity of the country, and the opportunities thus afforded to all who are willing to work for their share of it instead of waiting for a government to hand it to them, the publication of these reports should have had a good effect.

The Annual I. C. C. Accident Bulletin

The statement of passengers killed on the railroads of the United States in 1923 shows the lowest annual total on record, as appears from the government bulletin, which was issued last week and is abstracted on another page of this issue; 138 passengers, as compared with an annual average of 227 for the preceding four years. Statistics are always cold, but this figure elicits from the statistician the comment that it is a "conspicuous feature" of the year's record. There is one more conspicuous than that, however; the total of passengers killed in derailments and collisions, which is 54. (See Table D). This is the item that is generally used in making comparisons of one year with another, for the reason that the larger item includes many casualties which are unpreventable, so far as the railroad and its employees are concerned.

The fatalities included in the smaller total are to be classed, usually, as those for which the railroad is alone responsible. This total, 54, is only a trifle above 51 per cent of the average annual total in the four years preceding. Averages are ticklish things and not to be made the basis of boasting (we must note that for the first seven months of 1924 the number of passengers killed in train accidents totals *three times* that for the same period in 1923), but the record for 1923 as a whole is gratifying and encouraging.

Making "Protected" Crossings Safe

During the past ten days two fatal accidents have occurred at highway grade crossings supposedly protected by gates and watchmen. Fortunately in neither case were the trains involved derailed or the fatalities would probably have been greater. It must be recognized, however, that every roadway vehicle is a potential train-wrecker and that the safety of railway employees and passengers is as much at stake at the highway grade crossing as is that of the passengers in highway vehicles. No railway would consider a grade crossing with another railway adequately protected if provision were made only for stopping one line of traffic with no interlocking signals to insure giving the "clear" indication to but one of the conflicting routes at the same time. It need scarcely be said that a crossing provided with gates, if the gateman is negligent, is more dangerous than no protection at all. Motorists are more or less cautious in approaching unprotected crossings; but when they approach a crossing where gates are provided and these are in the raised position they —even the most careful of them—rarely ever exercise any caution. They take the watchman's word for it. Is the time approaching when it will be necessary to provide the same interlocking protection at busy highway crossings as that in use at grade crossings with other railways?

Traffic, Earnings and Expenses

THE recent results of railway operation have been the best and most encouraging that have been shown since before government operation was adopted.

This paper in its issue for September 27 published an editorial entitled: "Will Traffic Make New Record?" The prediction implied by this question has been fulfilled. Freight car loadings in September slightly exceeded those of September, 1923. In the week ended October 18 and again in the week ended October 25 the loadings of freight exceeded any record ever previously made. The highest record ever reached in any preceding year was in the last week of September, 1923, when the loadings were 1,097,274. In the week ended October 25, 1924, the number of cars loaded with freight was 1,112,345 which exceeded the highest record of 1923 by more than 15,000 cars.

The freight business of September showed a large increase over the business of August. This large increase in business came when the efficiency and economy of operation were perhaps the greatest in history. The effect it produced upon net operating income was substantial and significant. Net operating income of the Class I roads amounted in September to $116,718,000. This was an increase of $24,291,000 over the figure for September, 1923, and exceeded the net operating income ever earned in any previous month under private operation. After advances in rates were made by the Railroad Administration in 1918 the net operating income increased to $138,500,000 in July and exceeded $128,000,000 in August. The increase in earnings caused by the advance in rates was, however, speedily absorbed by increased expenses, and before the end of 1918 the railways were incurring a large deficit.

There is no prospect of any such developments occurring this year. The net return earned in October unquestionably was larger than in September. No doubt the usual seasonal decline in freight business and earnings will soon begin. There are good reasons for believing, however, that for some months freight business will continue to be larger than in the corresponding months of earlier years, and that in consequence the net return earned will continue to be relatively large. The operating and financial results secured by the railways in September reflect strikingly the changes in the railroad situation which have occurred during the last four years. It will be recalled that September, 1920, was the first month after the war-time guarantees to the roads were withdrawn and the first month in which the advance in rates of that year was in effect. In spite of the large business handled total earnings in September, 1924, were $78,000,000 less, or about $2,606,000 less a day, than in September, 1920. This was due, of course, to the fact that rates have been reduced. Operating expenses in September, 1920, were $509,700,000 and in September, 1924, only $381,600,000, a reduction of over $128,000,000. It is also interesting to find that they were $18,600,000 less than in September, 1919, under government operation. This is significant because in the last six months of government operation there was a very large increase in operating expenses. They amounted in September, 1919, to $13,339,000 a day; in February, 1920, the last month of government operation, to $14,310,000 a day, and in September, 1924, to $12,719,000 a day. Therefore, in September, 1924, they were $620,000 a day less than in September, 1919, $1,591,000 a day less than in the last month of government operation; and $4,300,000 a day less than in September, 1920.

One of the most notable facts to which the statistics of September, 1924, call attention is that owing both to the economies that have been effected and to the increase in traffic the ratio of operating expenses to total earnings is working back to normal. The ratio in September was only 70.56 per cent, which is the lowest ratio that it has reached since July, 1918, immediately following the big advance in freight and passenger rates made by the Railroad Administration. For four years after they were returned to private operation the railways struggled with abnormal and adverse conditions. The advance in rates granted in 1920 was expected to enable them, if the volume of traffic continued to be large, to earn a net return of 6 per cent upon the valuation announced by the Interstate Commerce Commission. The first monthly report of earnings and expenses that was published showed that this expectation would not be realized. In fact, calculations made at that time and verified by subsequent developments demonstrated that the advance in rates was about half a billion dollars a year too small, on the basis of the costs of operation then prevailing, to produce the expected net return.

Furthermore, there immediately began a decline of traffic which so reduced earnings that the country's railway system was on the verge of bankruptcy throughout 1921. Traffic began to recover in 1922, but the Interstate Commerce Commission made reductions of rates which throughout that year and 1923 prevented an adequate return from being earned. In the early part of 1924 traffic and earnings again declined and it was not until September that the railways again enjoyed anything resembling prosperity.

The normal increase of production and consumption necessarily cause an increase of railroad business and to this as well as to increasing business activity is due the large volume of traffic which has been moving within the last two months. Indications at present are that how much net return the railways will earn for some time to come will depend principally upon the way in which their rates are regulated. Surely after four years of such poor financial results, and in view of the remarkable efforts and progress they have made in increasing the efficiency and economy of operation,

the rates will be regulated in future so as to enable the roads to earn an adequate net return if the volume of traffic continues to be sufficiently large.

The Election and the Railroads

THE results of the national election must be interpreted as an expression of the sentiment of the American people upon the railroad question. If there was any "paramount issue" in the recent political campaign, it was the issue of the sane and traditional policy of this nation in dealing with great economic problems versus a policy of dealing with them in a socialistic way. The railroad question was directly and vitally involved in the contest. The Republican party stood for fair regulation of the railways in accordance with the general principles of the Transportation Act and against government ownership. The railway plank in its platform expressed this policy mildly but clearly enough, and its principal spokesmen, including President Coolidge, General Dawes, Secretary Hughes, Secretary Hoover and Chairman Butler, explicitly and vigorously attacked the unfair and destructive policy of regulation and the policy of government ownership advocated by La Follette and his following. The Democratic platform endorsed the purposes of the Transportation Act, but asserted they had not been accomplished and advocated a general overhauling of the law. La Follette and his supporters advocated reductions of railway rates regardless of operating expenses and taxes, favored the repeal of the Transportation Act and a confiscatory reduction of the valuation of the railways and, finally, government ownership of the railways.

Never has the railroad question been so fully discussed in any national campaign. Never has one of the leading parties so frankly and energetically fought against unfair regulation and government ownership as did the Republican party, and never since the days of populism has any party fought so frankly and energetically against a constructive policy of regulation and in favor of government ownership as did the La Follette party. The national candidates of the Democratic party in their public utterances evaded the issue.

The outcome has been an overwhelming victory for the party whose leaders stood out for constructive regulation and against government ownership and a smaller vote than was generally expected for the so-called "Progressives", who expressly advocated the repeal of the Esch-Cummins Act and government ownership of railways. The propaganda of the La Follette movement was expected by the leaders of that movement to go like hot cakes among the farmers of the west. Before the campaign was ended it became so evident that a large majority of western farmers were opposed to government ownership that Senator La Follette deemed it expedient to say in a speech that it was not an "immediate issue". The election returns are very incomplete at the time this editorial is being written, but they indicate that some western radicals who recently were elected to Congress have been defeated for re-election, and there can be no doubt that the big vote rolled up against men like Brookhart of Iowa and Magnus Johnson in Minnesota, has been largely due to their advocacy of government ownership. The radical leaders relied upon a large vote from members of labor unions, especially railway employees. The officers of the American Federation of Labor and of most of the railway labor unions told their members to vote for La Follette. It would appear, however, that even the members of labor unions have not voted so strongly for the socialistic program of the leaders of the unions as it was expected they would.

The reaction of the American people against government ownership of railways and public utilities has been unmistakable and decisive. The advocates of that policy have, however, a policy of regulation which they advocate. The true purpose of their policy of regulation, which includes such proposals as a reckless reduction of the valuation of the railways and the passage of the Howell-Barkley bill, is to destroy private ownership and management by regulation and thereby indirectly force government ownership upon the country. They may be shrewd enough in view of the results of the election temporarily to discontinue the public advocacy of government ownership, but there can be no doubt that they will continue their advocacy of a destructive policy of regulation. Experience has shown that the policy of regulation they advocate appeals to many people who are opposed to government ownership. The immediate problem and duty of the opponents of government ownership will be to make the public generally understand the true purpose of the propaganda against reasonable and constructive regulation and that only by pursuance of a fair and constructive policy of regulation can it be made certain that government ownership will be avoided.

One Waste Being Eliminated

THE railways have ordered since September 1, nearly three-quarters of a million tons of rails for their next season's requirements. This tonnage is larger than has been ordered in the same period in any recent year, except in 1922 when an abnormally large tonnage was ordered prior to October 1 to escape an increase in the price which became effective on that date. Following, as this year's record does, a similar development a year ago, it indicates a rapidly growing appreciation of the possibility of effecting a marked economy in the cost of laying rail by placing it during the winter, owing to the possibility of utilizing what would otherwise be largely unproductive time of the winter track forces. The first step in the development of this plan is to order the rail and auxiliary fastenings sufficiently early to insure their delivery by the time cold weather forces the suspension of other maintenance work. The large tonnage now being ordered indicates that this is being done.

One of the most important problems in the development of our industrial life is the elimination of waste. Nowhere is this more pronounced or less excusable than in the utilization of labor. The opportunity for improvement in this respect is not confined to any one industry, although some industries have made far greater strides towards the efficient utilization of their labor than others. The railway industry has lagged in this respect. It employs large numbers of men, which men have been available when needed in the past. Out of this condition has grown the practice of hiring men when needed to conduct work most conveniently and of laying them off at its completion without thought of the further utilization of this labor and of the economic loss due to idleness throughout the winter months.

Recognition of this loss is causing many leaders in industry to give serious consideration to the possibility of stabilizing their forces, both to insure continuous work for those in their employ and to enable them to retain men of experience. Prompted by this desire they are finding that many of the surges and sags can be modified or eliminated entirely. This is equally true of the railways. The discovery that rail can be laid to almost if not quite equal advantage during the winter and at a lower ultimate cost, all conditions considered, is one indication. Further consideration of this subject will reveal other ways in which the wide fluctuations in the number of employees, particularly in the engineering and maintenance of way departments, between summer and winter can be reduced. This subject is worthy of serious consideration, not alone from the standpoint of industry as a whole but with the purpose of reducing the cost of railway operations as well.

The Labor Policy of the B. & O.

PRESIDENT WILLARD of the Baltimore & Ohio was a leader of the railways which entered into the "Baltimore agreement" with the shop crafts unions which struck in 1922. Soon afterward it was announced that the management of the Baltimore & Ohio and leaders of the shop crafts unions had entered into a co-operative arrangement the purpose of which was to increase the efficiency of operation of this railway's shops. Since that time there have been widespread interest in and discussion of the Baltimore & Ohio's "labor policy." A good deal has been said upon the subject by spokesmen of the labor unions. In an address delivered last week, an abstract of which is published elsewhere in this issue, President Willard, for the first time we believe, publicly outlined this policy and gave his point of view in regard to it.

Some of the railways settled with the national labor unions the strike of 1922 while a larger number have never had any relations with the national shop crafts unions since then. The outcome has been to make it possible to compare the results that have been secured by some railways in dealing with the national unions and by others in declining to deal with them and maintaining relations only with the representatives of their own employees.

It was practically certain that on the whole the railways that settled with the unions and thereby got back practically all their former employees would secure better results for some time than the roads that did not settle. The managers of the roads that did not settle were, however, confident that in due time they would be able to get better results by dealing only with their own employees than by dealing with the national unions.

It has very commonly been complained against labor unions that their leaders take no interest in efforts made by the managements of business concerns to increase efficiency of operation and production. The charge long has been made against them that they have constantly sought, first, to secure high wages almost regardless of the ability of concerns to pay them, and, secondly, to secure working conditions that would increase the number of men that would have to be employed and that would, in consequence, be available for membership in the unions.

It is well known that Mr. Willard always has been friendly in his attitude toward the labor unions. It is not surprising, therefore, that he should have been approached, if any railway officer was to be approached, by labor leaders with a plan of co-operation. No doubt the labor leaders have had their disposition to co-operate with the Baltimore & Ohio management stimulated by consideration of the fact that there are now some railway shops that are union and some that are non-union and that the results obtained on the different railways are sure to be compared to the disadvantage of the unions unless the employees in the union shops render at least as good service as is rendered by employees in non-union shops.

However that may be, Mr. Willard's address in which he tells what the Baltimore & Ohio labor policy is and what he believes is being accomplished by it will be read by railway officers and managers of business concerns of other kinds with much interest. It is significant to find that when Mr. Willard tries to define exactly what is his railroad's labor policy he finds it a little difficult to do so. The nearest approach he makes to giving a definition of it is when he says: "It may almost be said that the Baltimore & Ohio labor plan or policy which has been developed in conferences between the management and the men is little or nothing more than an earnest determination on the part of each to deal honestly, fairly and sympathetically with the other, at the same time making use of such agencies or methods as seem most likely to secure the results mutually desired."

It would be difficult to make a better general statement than this of the plan or policy that ought to be adopted by every employer and his employees. Obviously, however, this definition throws no light upon the question whether close co-operation and the desired results are more likely to be secured by a business concern that deals with labor unions or one that does not deal with them.

The experience of the Baltimore & Ohio may be used as an argument in favor of a policy of dealing with the labor unions. The experience of some other railways may be used with equal force as an argument against dealing with them. It is only two years since the shop crafts strike on some of the railways was settled. Only a man who believes strongly in labor unions or one who strongly disbelieves in them can as yet convince himself that the results secured during these two years in railroad shops constitute a real argument either for the union shop or the non-union shop.

Satisfactory Condition of Equipment Market

RAILWAY equipment orders in October totaled 135 locomotives, 11,853 freight cars, and 188 passenger cars. The last figure is exclusive of 150 subway motor cars ordered by the Interborough Rapid Transit Company. Even with that omission, the orders placed for railway equipment had a total value in excess of $40,000,000. The buying movement, which started in the early part of September with the placing of the Pennsylvania's order for 10,000 cars, had by the end of October reached such dimensions that in the two months' period the equipment builders were the recipients of over $100,000,000 worth of new railroad business. In this two months' period also there were orders placed for some 600,000 tons of rail valued at over $25,000,000, most of which were placed in October. This large rail buying should be reflected in the near future in sizeable orders for track accessories of one kind and another.

	Domestic Orders		
Month	Locomotives	Freight Cars	Passenger Cars
January	125	6,020	29
February	85	18,365	293
March	283	35,846	237
April	100	11,189	131
May	107	435	101
June	1	387	31
July	83	533	149
August	8	4,751	164
September	101	22,520	250
October	135	11,853	188
Total 10 months	1,028	111,899	1,573
1923—10 months	1,814	72,227	1,593
1922—10 months	1,856	125,658	1,553

The comparative lack of any market during the summer months probably was largely due to the decline in railway earnings. The recent equipment buying movement, which has so soon resulted in $100,000,000 worth of purchases, doubtless has been largely due to the recent increase of traffic and earnings. There will be some who will try to explain the situation as being due to the natural retardation of business to be expected in a presidential election year, which retardation was overcome as it became more and more apparent that the present administration would be retained in office. Whether that theory be correct or not, it certainly is correct that, because of the small amount of business placed during the summer months, when the present buying movement finally did commence it was assisted by low prices and the promise of prompt deliveries. The prices at which some of the September business was placed were surprisingly low.

It is estimated that there is outstanding, at the present moment, prospective business amounting to an additional

$100,000,000. The term "prospective business" may, under some conditions, mean almost anything, but in this case it appears to be bona fide because a satisfactorily large share of it is embodied in the form of actual inquiries for prices. There were those who believed that much of the business was awaiting the result of the election on Tuesday. By the time that this reaches the reader it should be possible to determine whether those who held to this view were correct, and adequate proof should be available inside of the next week or two.

There were those who pointed out earlier in the year that there was an unwarranted fear in the business world of the possible unsettlements of presidential election years. Apparently, there was some such unsettlement during the campaign which came to its close on Tuesday. However, business is good now, and it promises to continue very fair for the remainder of the year which means that the year as a whole should compare well with other years. As far as the equipment market is concerned it will be noted that freight car orders for the first ten months of this year exceeded those of last year, although not up to the total of 1922. Passenger car orders are on a parity with the figures for both 1923 and 1922. Locomotive orders are running behind and the builders continue to have but a small volume of uncompleted orders on their books. According to Car Service Division reports, orders on hand on October 1 totaled only 285; deliveries in September totaled 160.

The equipment market was one of the first large units of industry to show quickening activity in September. Conditions in other business have since substantially improved. There is offered further evidence of the substantial effect that the buying power of the railroads has on the country's industry as a whole.

Among the large orders for locomotives placed in October were 50 for the Southern Pacific, 50 for the Pennsylvania to be built in its own shops, 15 for the New York Central and 7 electric locomotives for the New Haven. A Wabash order for 50, not included, however, in the October totals, is reported in the news columns of the present issue.

The larger freight car orders included 5,595 for the Southern, reported in three lots; 1,000 additional to the 2,000 placed in September by the Reading Company; 1,000 for the Wheeling & Lake Erie, 1,250 for the Gulf Coast Lines; 1,400 for the Great Northern, and 1,500 not previously reported, for the Western Fruit Express.

The passenger car orders included among others, 8 for the Lehigh Valley, 20 for the Reading, 38 for the Southern, 13 for the Texas & Pacific, 63 for the Illinois Central, and 40 for the Long Island.

Our Centennial and the International Congress

THE suggestion has been made that the proposed centennial celebration of American railroads be held in 1930 because of the possibility of bringing the International Railway Congress to this country at that time. This is one of the best suggestions that have been made in formulating plans for the celebration and especially in deciding when it should be held. The next meeting of the International Railway Congress will be held in London in 1925, when the centenary of the opening of the Stockton & Darlington will be observed. This meeting will put the Congress back on the pre-war schedule of meeting every five years, and in consequence its next convention no doubt will be held in 1930.

The International Railway Congress is worth striving for. It was considered of enough importance when last held in this country in 1905 for the President of the United States and many other distinguished persons to address it. The chances of the success of an effort to bring it across the Atlantic in 1930 seem excellent. When 1930 arrives it will be 25 years since this country had the honor of entertaining the Congress, notwithstanding that on every occasion since 1905 it has sent delegations to represent our railways in foreign lands. If there were a certainty of the holding of the centennial of American railroads at that time this should assure the success of efforts made to get the Congress, especially when it is considered that it is just such an occasion that has persuaded the Congress to select England for its next convention.

Is there any valid reason why the celebration of the centenary of American transportation cannot or should not be held in 1930? That year is acceptable historically. The *Railway Age* remarked in a previous editorial that 1928 would do very well for centennial purposes, as marking principally the centenary of the year in which the construction was begun on the Baltimore & Ohio. But 1930 marks the centenary of the actual completion of the first railroad common carrier project, also the inauguration of the first train service, the run of the first locomotive built in this country and the successful run of the first steam locomotive placed in regular service in this country. Earlier years mark such preliminary steps in rail development as the issuance of charters, the beginning of construction, etc., and for that reason may be said to mark the inception of railroads, but the year 1830 may be said to mark the beginning of rail *transportation* in America, just as 1825 marks the beginning of British railroad transportation.

This is not the only test to which the year 1930 may safely be subjected. It invites a consideration because of the opportunity afforded for preparation. There is a sentiment prevalent that the centennial of American railroads should not be simply a celebration by the railroads themselves, but an American Centennial in every sense, launched in the form of a great national exposition of progress, officially sanctioned by the government and enjoying the support and participation of every public and private interest, activity and occupation, whether industrial, financial or political. The approaching centenary of the world's greatest transportation system, with its vital connection with the development and prosperity of our country, should resolve into a proposal of this sort. It would be extremely regrettable if the centennial plan should fall short of this ideal.

With this as a goal it is obviously vital to have adequate time for preparation. If 1928 was a favored date when the Centennial was first suggested, the same cannot be said now. It took three full years of fast work to prepare for the Columbian exposition after the organization was perfected. It is only three years now until 1928. It must be remembered that it takes planning for such an event and planning, moreover, which must be started soon enough to arrange so that all interests shall be properly alined and conflict avoided with other activities which might detract from the attention which the Centennial should receive. The year 1930 will permit of this being done.

There is another test which should be applied to every proposal regarding the year when the Centennial should be held. That is the desirability, if not the indispensability, if conditions will allow, of selecting a year that will find no railroad or interest reluctant for sentimental or other reasons to enter wholeheartedly into the furtherance of the project. The success of the Centennial requires that the house shall not be divided against itself. No objection can be raised against 1930 on this score. On the contrary, it should be received with favor as detracting nothing from the glory of any one road and at the same time marking history cherished by all roads.

This examination brings out the fact that from viewpoints

other than that of securing the International Railway Congress, 1930 is a good year for Centennial purposes. When consideration is also given to the fact that 1930 is not the year of a presidential election, and to the possibility of bringing the International Railway Congress to this country at that time, it is difficult to see why 1930 should not be definitely adopted.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

A Chapter in American Education—Rensselaer Polytechnic Institute, 1824-1924, by Ray Palmer Baker. Chapter 7, "Canals and Ralroads" mentions R. P. I. graduates prominent in construction and management of internal improvements. 170 p. Pub. by Scribner's, New York.

A Popular History of American Invention, edited by W. B. Kaempffert. Part I, "The Revolution of Transportation," Part II, "Communication," Part III, "Power," Part IV, "Exploiting Material Resources," Part V, "Automatic Labor-Saving Devices." 2 volumes. Pub. by Scribner's, New York. $10.00.

The Ports of Galveston, Houston, and Texas City, Texas. Port series No. 6, prepared by Board of Engineers for Rivers and Harbors, War Department, and Bureau of Research, Shipping Board. Describes railroad facilities and territories served. 267 p. illus. maps. Pub. by Government Printing Office, Washington, D. C. 75 cents.

Potatoes. No. 5 of "Commodity Prices in Their Relation to Transportation Costs," prepared by Bureau of Railway Economics. 12 *p. Issued by Bureau of Railway Economics,* Washington, D. C.

Trains of Recollection, by D. B. Hanna. Former president of Canadian National relates incidents of 50 years of railway service in Scotland and Canada. 350 p. Pub. by Macmillan, New York. $5.00.

What's What in the Labor Movement, compiled by Waldo R. Browne. A reference book containing definitions of terms, and similar information. 578 p. Pub. by B. W. Huebsch, Inc., New York. $4.00.

Schüttelschwingungen, by A. Wichert. A study of the theory of vibrations with particular reference to electric locomotive driving mechanisms. Published in German by the Verein Deutscher Ingenieure Verlag, Berlin. Price, 12 Marks.

Periodical Articles

The Chimera of Monopoly, by Ambrose Paré Winston. "Among all lines of business, railways have in most countries been selected as subjects of exceptional control as having singular power to exact from the public excessive payments. An examination of the financial history of railways in all parts of the world seems rather to indicate that there is in the railway business a singular inability to obtain for that service earnings equal to those frequently realized by other investments." p. 688. Atlantic Monthly, Nov., 1924, p. 680-692.

Coal Storage and the Railroads, by R. H. Aishton. Management and Administration, Nov., 1924, p. 473-474.

Hands vs. Heads, by Philip Cabot. A criticism of the results of engineering training particularly, with comparison of railroad leadership today, and two generations ago, p. 95. World's Work, Nov., 1924, p. 92-97.

Labor's Chain of Banks, by Warren S. Stone. What they have accomplished and what they hope to accomplish. World's Work, Nov., 1924, p. 47-52.

Shattered Service, Piled-Up Costs, Stifled Progress—and Higher Taxes! by Harry S. New. The Postmaster General discusses public ownership. Magazine of Wall Street, Oct. 25, 1924, p. 996-997, 1046.

New Books

Problems in Business Economics. By Homer B. Vanderblue, Professor of Business Economics, Harvard Graduate School of Business Administration, and Economist, Harvard University Committee on Economic Research. 625 pages. Size 6 in. by 9 in. Bound in cloth. Published by A. W. Shaw Company, Chicago.

Professor Vanderblue is already well known to railway readers through the book, "Railroads: Rates, Service, Management," written in collaboration with K. F. Burgess, general attorney of the Chicago, Burlington & Quincy, and which book is unquestionably the leading work on railway regulation as formulated in the Transportation Act. He was one of the first to engage in a study of the business cycle as affecting transportation, results of which study were presented in the *Railway Age* some months ago in his articles entitled "Railroad Traffic and the Business Cycle." Professor Vanderblue's new book, however, is not primarily a railroad book.

Probably the greatest contribution that the Harvard Graduate School of Business Administration has made to education has been the application to the study of business of the case system hitherto developed in connection with the study of law. For the purposes of the case or problem method there have been gathered from a wide variety of concerns, details of a similarly wide variety of problems of financing, production and distribution. As the publisher's statement for the present book puts it, "These . . . are presented for analysis and decision in the form in which they have come across the desks of business executives." Professor Vanderblue's book is one of a series of several problem books known as the "Harvard Problem Books." published by the A. W. Shaw Company.

Problems in Business Economics is, as we take it, intended to bring out the importance in the forming of executive judgments, of generally accepted economic principles. The content of the book indicates that it deals particularly with the economics of the business cycle and the practical application thereof to business decisions. The problems in the book are such as relate to the study of the business cycle, and are in general such as would be offered to a concern seeking to lay its plans so as to meet correctly the "ups-and-downs" of business activity. Thus it differs from its associate problem books which deal with problems in accounting, sales management, marketing, etc.

The present book is in three parts. Part I is an explanation of the business cycle, embodied in articles by authorities on the subject. Included is a fairly detailed description of the methods used by the Harvard Committee on Economic Research in its studies relating to the cycle. Part II embodies the larger part of the book and contains the problems. These are segregated under three heads: financial problems, operating problems, and distribution problems. Part III contains an explanation of a method of comparing the activities of an individual concern with the Harvard index of general business. This explanation is from a pamphlet issued a short time ago by the Harvard Economic Service and was prepared by Professor W. L. Crum, statistician of the Harvard Committee on Economic Research, author of the article in the *Railway Age* of October 18, entitled "Movement of the Products of Agriculture."

Letters to the Editor

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.*]

Automobilists Opposed to Stop Laws

SELLERSBURG, Ind.

TO THE EDITOR:

For a comprehensive statement of what everybody would like to see done, without the slightest suggestion of how to do it, the report of the recent conference at Indianapolis on the highway crossing danger, as given in the *Railway Age* of October 25, page 763, ought easily to take the premium. It is no wonder, of course, that these conferees found it impossible to do anything, for that has been the fate, thus far, of everybody else in this field; and perhaps we should skip over anything in the report that is not satisfactory, while we give heed to the one practical recommendation that is offered; that is, the creation of a committee to study the situation. Indiana is not the whole of the United States; but if one state can do something really constructive, the example thus set may be of value in other states.

More particular attention should be called to one of the most useful papers presented at that conference, that of Dr. E. R. Baldridge, of Terre Haute. The title of Doctor Baldridge's paper as given in the newspaper reports indicates that he was to present an argument against the enactment of laws, like those in force in North Carolina, Virginia and other states, requiring that all automobiles shall be stopped before passing over railroad crossings; but his address was really a comprehensive and impartial review of this feature of the problem. He spoke as the representative of the Hoosier State Automobile Association. He had evidently consulted members of his association throughout the state, and no doubt reflects that branch of public opinion. He admitted that either the automobile or the railroad train must stop unless there can be adequate warnings for the benefit of the careful driver; and whenever possible he would provide warnings sufficient also to protect the thoughtless or reckless driver. Neither party desires to compel the other party always to stop. He thinks that 97 per cent of automobilists are reasonably careful, and, moreover, that 97 per cent of all cars arrive at crossings when no train is approaching. At a busy crossing he had a count made, for 11 hours, and found that the number of motors passing over was above 5,000, carrying, it is estimated, 20,000 persons; while the railroad passengers going over the same crossing at the same time probably numbered not over 2,000. For extremely dangerous crossings he would, perhaps, approve of a stop law; but as a rule he thinks the desideratum is a warning system which will make it impossible for any person who is awake, sane and sober, to pass the crossing without due caution. Although he did not make specific recommendations, this view evidently calls for either a hump in the road or a slight detour, such as was recently illustrated in the *Railway Age,* (September 27, page 561).

Doctor Baldridge said that in the city of Louisville, Ky., careless automobilists driving through gates and breaking them numbered in a single year, nearly 500. He demanded, as anyone must demand, that every such driver be dealt with severely. He said that the cost of installing warnings should be borne jointly by the state and the railroad in proportion to the number of travelers affected; which, in the case that was cited, would make the financial burden on the state 10 times that to be borne by the railroad. In his count of 5,000 motorists, Doctor Baldridge recorded cars from 41 different states; a fact which suggests that all signs ought to be uniform throughout the country. The members of his association are unanimous in calling for two signals, the flashing light and a bell or other noise device. Evidently these people who call for an audible warning do not realize how often a bell is useless under present-day conditions. The demand was unanimous, according to the doctor's interpretation of his questionnaire, for white markings on the pavement, where this is practicable; and he would provide first, second and third cautions.

R. E. PORTER

Protecting the Rear of Freight Trains

CUMBERLAND, Md.

TO THE EDITOR:

Recent discussion in your paper regarding the flagman is extremely interesting to one "in the ranks." I disagree with the advocates both of long flagging and no flagging. Where I work we have the most up-to-date automatic block system. We have a mountain 20 miles long and at times it gets so foggy you can't see a car length. We are flagging twice as far now with our automatic system as we did under manual block.

We are doing this, of course, because that is the way they want it done.

Regarding the "no flagging" idea there is just one way that *that* could be done. (At least where conditions are similar to ours—fog and long and heavy trains.) You could have a telephone at every signal and never allow a train to proceed past a red block. This would of course cause more delay, and would be somewhat serious at certain points.

But the thing that I wanted to bring out is what I consider the fallacy of long flagging. For instance, the rear end stops just beyond a block signal, say two car lengths. This is about the most dangerous position we can get into. The flagman should go back as far as possible while yet knowing that he can reach his caboose in three minutes. Now, this is no specific distance. There may be a nice smooth path or it may be littered with rails and ties or dug full of holes. But my point is this: Our fusees burn five minutes. When recalled the flagman leaves torpedoes and a fusee and reaches the rear end in, say, three minutes. This gives two minutes to get the train under way and out of the danger zone before the fusee burns out. This, to my mind, is the safest procedure we can follow. It is understood the head end is instructed accordingly. We do not pass any signals at stop as 125 cars in the fog must spell guesswork, any way you can fix it.

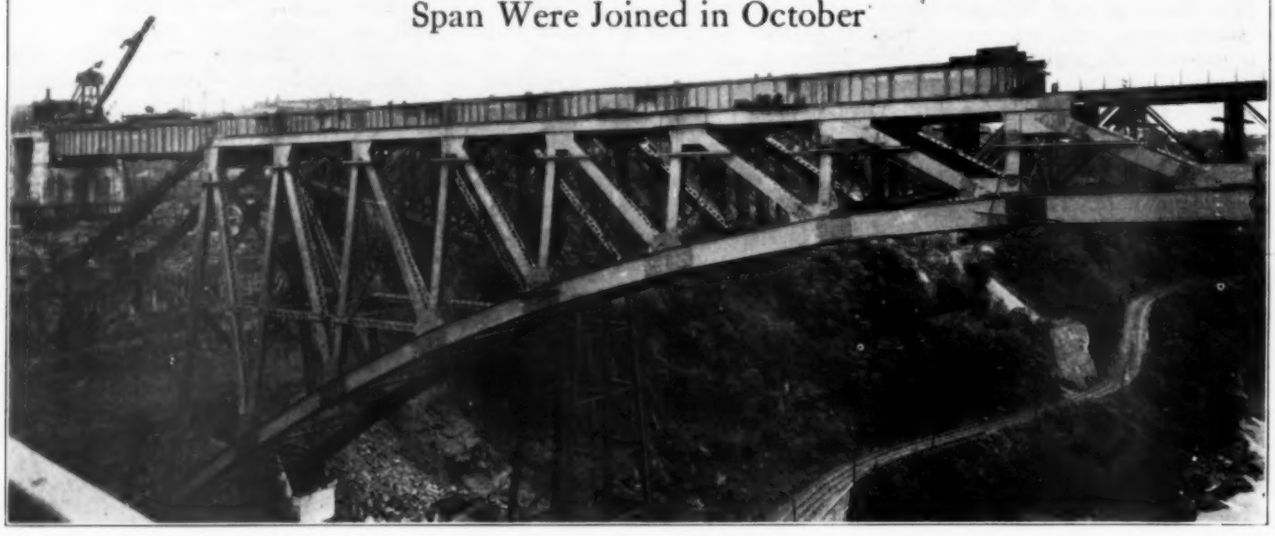
I shouldn't be surprised to be criticized any day for this kind of railroading, but I believe I am pursuing the safest possible course. The distance the flag will be back is, of course, governed by the physical ability of the flagman to travel over the ground. This, however, is a still different phase of the subject.

The flagman who goes back farther than what I have above outlined, practically eliminates his most useful adjunct—the fusee. If this burns out before he reaches his caboose there is no protection except his caps; and I would rather have caps and fusee a short distance than caps alone a long distance.

FREIGHT CONDUCTOR,
Baltimore & Ohio.

New Niagara Gorge Arch Nearing Completion

The Two Cantilever Arms of the Michigan Central's 640-Ft. Span Were Joined in October



On October 11, after the closing members at the crown of the Michigan Central's new 640-ft. arch across the Niagara gorge had been placed in position, the two halves of the structure, which had been extended from the two sides of the gorge by cantilever erection, were brought to bearing by releasing the backstays and the arch became a self-supporting structure. This bridge, which has the distinction of being the longest railway arch bridge in America except one, the great Hell Gate arch, has been built to replace the Michigan Central cantilever bridge erected in 1883, increased train loadings having rendered the old structure inadequate. A description of the design and details of the new bridge and an account of the preliminary engineering studies and foundation investigations appeared in the *Railway Age* of June 13, 1923, page 177. The following article is therefore confined to an account of the construction work on this bridge, which entailed the solution of many interesting problems.

General Description of the Bridge

The new bridge is located in the space between the old cantilever structure and the 550-ft. arch used by the Canadian National (Grand Trunk). It has a span of 640 ft. from center to center of hinge pins and a rise of 105 ft. It is designed to carry two railway tracks on the deck at 13 ft. centers. It belongs to the spandrel braced type of steel arch with the lower chord conforming to a parabolic curve and the top chord horizontal. It was designed for erection by the cantilever method with a pin bearing between the two halves of the lower chord at the crown so that it is a three-hinge structure for dead load exclusive of the weight of the ballast and the track construction. However, as the crown joint in the top chord will be riveted solid, the structure will function as a two-hinged arch for live load.

The design follows the usual practice for riveted structures except that pin connections are provided at each end of the first two vertical web members on each side of the crown. These posts are so short that deformations occurring in the arch under load or temperature changes would have introduced excessive secondary stresses if they had been provided with rigid connections to the chords.

The size and general characteristics of the main truss members are given in one of the accompanying drawings. The bottom chords are of closed box section with two webs, 3 ft. 2¾ in. center to center by 5 ft. 6½ in. deep, each web consisting of four plates ⅝ in. thick. The angles are 8 in. by 8 in. by ¾ in. throughout, the variation in the makeup being made by changing the thickness of cover plates. The maximum bottom chord section has a gross area of 714.78 sq. in., to provide for a maximum resultant stress of 9,700,000 lb. The joints in the bottom chord members are necessarily made at the panel points and the abutting ends are milled for bearing on only the middle 2 ft. 6 in. of the total depth of 5 ft. 6½ in. These chord splices have been proportioned for 100 per cent riveting. The two trusses are set on a batter of 8 vertical to 1 horizontal, all members of the trusses, including the top chord, conforming to this batter.

The Floor Is an Independent Structure

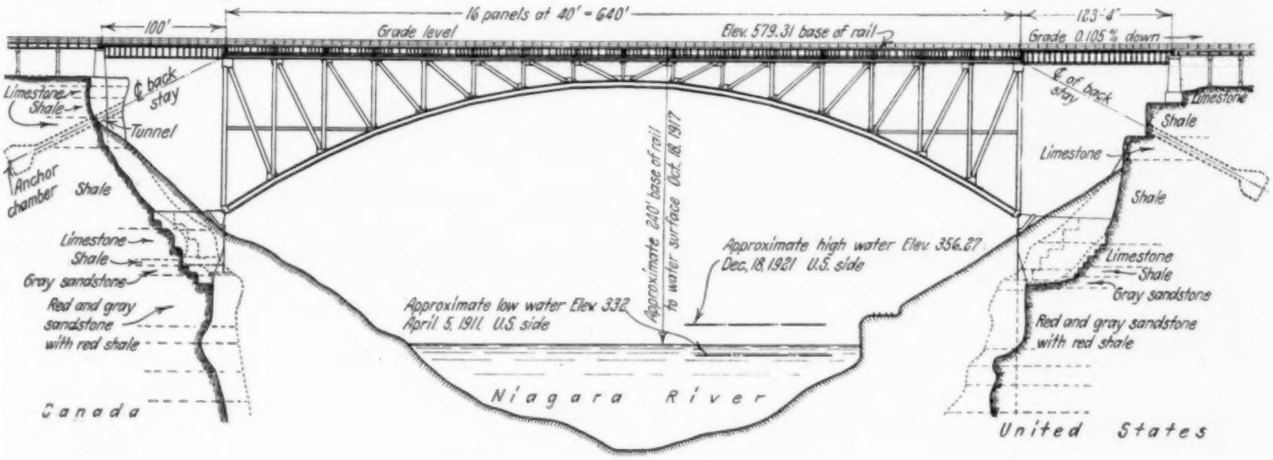
For a number of reasons, among which is the possibility of a subsequent raise in the grade of the tracks across the structure, the entire floor system is essentially independent of the trusses. The design provides for a ballasted floor with the ballast-retaining construction carried on a ⅜-in. floor plate resting on 15-in. I-beams spanning longitudinally between floor beams spaced transversely at intervals of 12 ft. 2 in. These floor beams are carried by two side girders which are supported on the trusses at the panel points by means of beveled castings which compensate for the inclined position of the top chords.

The arch bridge structure is flanked by a plate girder approach span at each end, that on the Canadian side being 100 ft. long and that on the American side 125 ft. long. These approach spans are provided with ballasted floors of similar construction. Beyond the approach spans at each end of the bridge the railway approaches consist of a number of spans of reinforced concrete viaduct terminating in street subways which carry the tracks over streets flanking the river on both sides. A total of 16,100,000 lb. of structural steel was required for the project, of which 9,600,000 lb. is in the arch trusses and bracing, 2,700,000 lb. in the arch

floor, 1,500,000 lb. in the approach spans and 700,000 lb. in the two street subways, while 1,600,000 lb. was required for the backstays, anchorages and other temporary work.

The conditions at the site of this bridge offered no alternative to the erection of the arch by the cantilever method, which was employed in the building of all of the bridges across the gorge except the original suspension bridges. The method used for this structure, however, is unique in that it was carried out without the use of anchor arms or counter

dian side. Owing to uncertainty concerning the condition of the rock to be encountered in excavating the tunnels for the backstay anchorages and in preparing the foundations for the piers, it was deemed advisable to carry on the work under an arrangement with the contractors that would permit of modifications in the plans or with the volume of work according to the dictates of judgment as determined by the actual conditions encountered. Accordingly, the work was awarded on a cost-plus-sliding-profit form of contract, the



The New Arch in Relation to the Gorge

weight structures. Instead backstays were carried into anchorages imbedded in the solid rock of the bluffs, dependence being placed on the weight and strength of the rock ledges to resist the pull on the backstays.

The Substructure Work Was Difficult

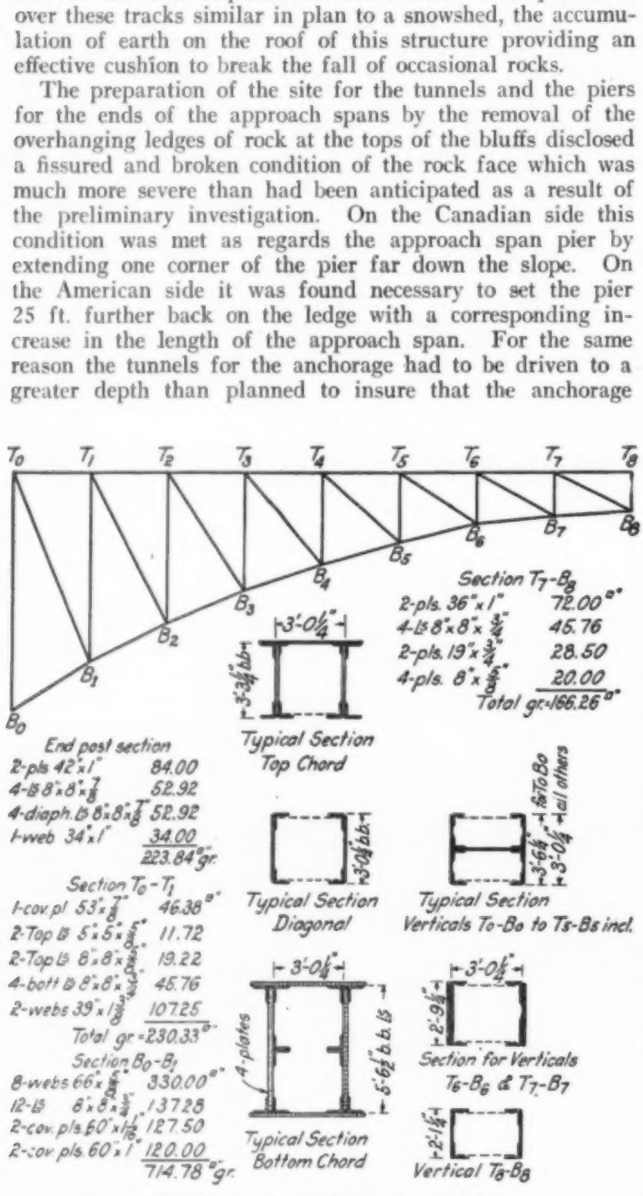
The contracts for the sub-structure were let on May 9, 1923, to the Gass-Thurston Company of Detroit, Mich., for the work on the American side and to the Federal Construction Company of Toronto, Ont., for the work on the Cana-

railway furnishing the cement, concrete aggregate, reinforcing steel and such falsework and blocking timbers as the railway's engineers deemed necessary. Other materials were furnished by the contractors and paid for by the railroad at invoice cost. The justification for this arrangement was borne out fully by experience throughout the course of the work.

Physical conditions at the site imposed a number of formidable obstacles to the prosecution of the construction, much of which involved operation on the steep faces of the

gorge. The site also afforded little space for the storage of materials, necessitating provision for a storage yard at a considerable distance, from which materials had to be teamed. On the American side the presence of the gorge railway at the base of the bluff called for the exercise of extreme care in the conduct of the excavation to prevent large masses of rock from rolling down the steep slope onto the gorge line tracks. Considerations of safety in the operation of this line required the construction of a protection over these tracks similar in plan to a snowshed, the accumulation of earth on the roof of this structure providing an effective cushion to break the fall of occasional rocks.

The preparation of the site for the tunnels and the piers for the ends of the approach spans by the removal of the overhanging ledges of rock at the tops of the bluffs disclosed a fissured and broken condition of the rock face which was much more severe than had been anticipated as a result of the preliminary investigation. On the Canadian side this condition was met as regards the approach span pier by extending one corner of the pier far down the slope. On the American side it was found necessary to set the pier 25 ft. further back on the ledge with a corresponding increase in the length of the approach span. For the same reason the tunnels for the anchorage had to be driven to a greater depth than planned to insure that the anchorage



Typical Sections of the Main Truss Members

would be imbedded in solid rock. The tunneling operations involved the driving of four shafts 7 ft. wide by 6 ft. 6 in. high at a downward pitch of 26½ deg. from the horizontal for a distance of 82 ft. on the Canadian side and 105 ft. on the American side and terminating in anchorage chambers approximately 20 ft. deep, 20 ft. high and 17 ft. wide.

In addition to the difficulties attending this work, which were described above, the tunneling operations were subjected to a further obstacle by the opening of water bearing fissures in the rock, discharging approximately 40 gal. of water per min., which, in the absence of any opportunity for natural drainage, required the constant operation of pumps and steam syphons until the work had been completed. After much trouble the flow of water was confined to pipes draining into a sump at the bottom of the anchor chamber from which the water was drained by pipes connected with pumps outside the tunnel.

After the entire anchorage steel had been erected in the chamber and tunnels the excavation was back filled with concrete, especial care being taken to secure full bearing of the concrete against the roof of the chamber to insure that the uplift action of the anchorage would be effectively transferred to the overlying rock. This was effected by

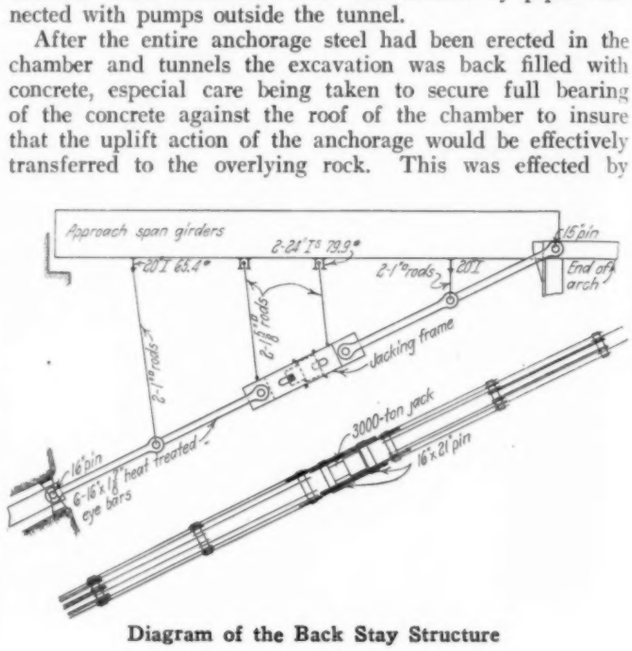


Diagram of the Back Stay Structure

grouting after the chamber had been filled with concrete. On the American side the grout was pumped in through well holes drilled from the surface overhead, while on the Canadian side it was piped in through the tunnel shaft. The effectiveness of the grouting was clearly demonstrated by the appearance of the grout in the roofs of the tunnels at considerable distances from the chamber. The drain pipes from the sump at the bottoms of the chambers were retained in place to insure the continuous removal of the seepage water by syphoning. They still continue to discharge water on the American side but on the Canadian side the flow of water has stopped.

Exacting Work on the Arch Piers

The location of the arch piers was determined after careful studies of the site during the course of the preliminary investigation to insure stable foundation on solid rock, and in attaining this end through the establishment of the requisite span and rise of the arch, the piers were fixed at an elevation that placed the footings well above the water level. The foundation work therefore consisted of the removal of the overlying talus and loose rock down to the solid ledge.

The exact pier locations were established by several independent triangulations from base lines on each side of the gorge, a feature of the work which was attended with considerable difficulty owing to the fact that irregular ground made it impossible to lay the base lines horizontal. The accuracy of the locations was checked by means of a tape line supported across the river inside of a pipe line suspended from the cantilever bridge. It was again checked by the engineers of the erecting contractor with a 1,000-ft. tape swung across the stream. However, after considering the various factors tending to vitiate the accuracy of the tape measurements under the unfavorable conditions imposed it was concluded that the triangulations insured much more accurate results.

By far the most exacting feature of the pier construction was the finishing of the concrete skew backs to receive the granite coping, the setting of the coping stones and the

dressing of these stones to the required degree of accuracy with respect to location and surface. The specifications permitted a tolerance in the granite surfaces of only 1/16 in., as the correction of irregularities of contact between the skew back castings and the masonry was limited to the adjustment that could be obtained with a joint of 1/16 in. sheet lead. In carrying out this work the stones were set ¼ in. high and then dressed down by stone cutters, the final cut requiring a "10 cut" finish to come within the tolerance limit. This work entailed the services of a force of stone cutters for a number of weeks.

The concrete work, including the concrete trestle approaches, involved the placing of 14,000 cu. yd. of concrete, of which 5,700 cu. yd. was in the arch piers and 1,500 cu. yd. in the anchor pits and tunnels. The largest single unit was the south arch pier on the United States side which contained 2,162 cu. yd. Of this total, 1,743 cu. yd., comprising the neat work above the footing, was placed in continuous run.

Noteworthy Features of the Erection

The contract for the superstructure was awarded to the American Bridge Company and covered both the fabrication and the erection. The first step in the erection of the steel was the placing of the spans for the street subways in the approaches at each end of the bridge. Following this the anchor girders and the tunnel sections of the backstays were installed, after which operation had to be suspended pending the back filling of the tunnels and anchor chambers with concrete.

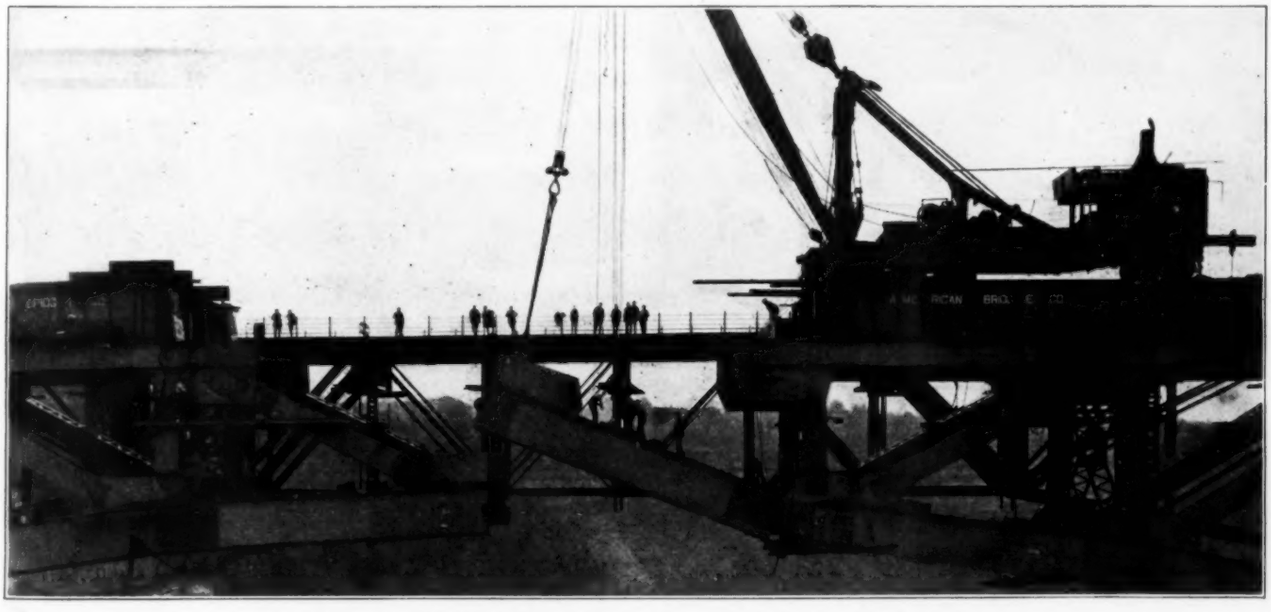
The procedure for commencing the erection of the two cantilever arms of the arch presented an intricate problem owing to the presence of the long approach spans at both ends of the arch. It was out of the question to place the skew-back bearings and the end posts of the arch trusses with the derrick cars standing on the concrete trestle approaches back of the approach span piers, because the reach was too great. On the other hand, to place the approach spans first introduced the problem of providing an outer support for them in the absence of the end posts of the trusses which were designed to carry them, while the alternative of providing falsework to enable the erection equipment to reach the ends of the arches would have involved prohibitive expense in view of the fact that some of the bents would have had to be over 100 ft. high.

The problem was solved by placing the approach girders first, providing a temporary outer support for them in the form of a temporary bent consisting of the posts for the second panel point (Canadian side) of the arch together with the cross bracing and a temporary base section for the columns. This bent was erected 84 ft. out from the approach pier on the American side and secured in place by struts and guys, after which the approach girders were set in place. This operation required the employment of two derrick cars and a carefully developed plan of procedure owing to the length and weight of the girders to be handled. The 125-ft. girders on the American side weighed 84 tons each.

With the girders in place the erecting equipment moved out on the span as far as the temporary bent and erected the skew back bearings, the end posts and the cross bracing, as well as the cross girder at the top, so that the approach girders could be brought to bearing upon their permanent outer support. This procedure was carried out first on the American side and after the temporary bent could be released and transferred across the river, the operation was repeated on the Canadian side.

The next step was the erection of the backstay system complete, including the suspender rods by means of which its dead weight was carried by the approach span. The weight involved was considerable, involving not only a chain of six lines of 16-in. by 1⅞-in. heat-treated eye-bars capable of taking a stress of 4,300,000 lb. for each truss, but also a jack of 3,000 tons capacity and the necessary jacking frame required for adjusting the length of the backstay in effecting the closing of the arch at the crown. Each backstay is connected to the arch by a 15-in. pin in the end of the top chord.

The erection of the two halves of the cantilever necessarily involved an adjustment of the position of the two arms so that the outer ends were 1 ft. 10½ in. above the normal position when the closure was made. The calculated gap between the ends of the cantilevers at the crown ranged from 7 9/16 in. to 15¾ in., depending on temperature and on the exact manner in which the stress in the backstay anchorage was transmitted to the concrete in the tunnel. In addi-

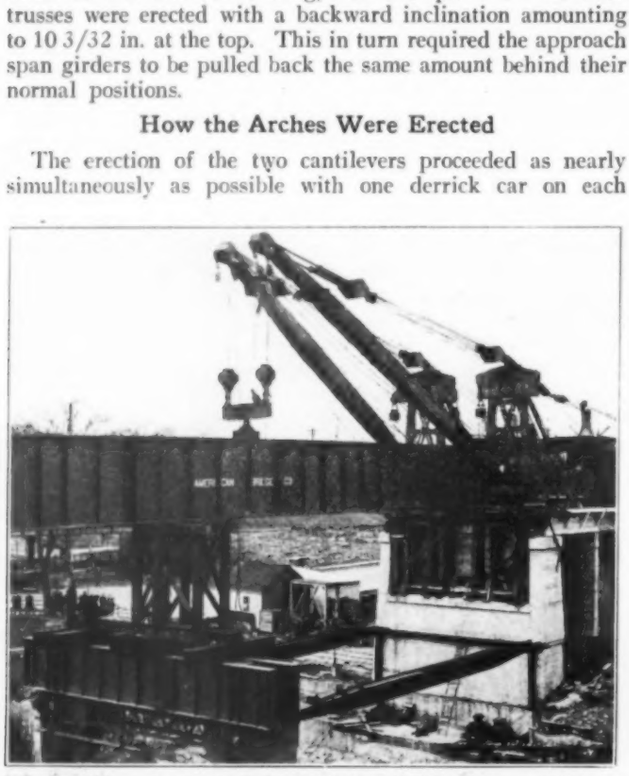


Placing the Closing Member in Bottom Chord of the North Truss

tion to the backing off of the backstays thus required to bring the arms to contact, calculations indicated that an additional adjustment in each backstay of from 2⅜ in. to 2 11/16 in. was necessary to relieve the strain on the backstays. The maximum required adjustment of each backstay at minimum temperature was computed to be 11 in. In order to provide the necessary separation of the cantilever arms at the time of closing, the end posts of the arch trusses were erected with a backward inclination amounting to 10 3/32 in. at the top. This in turn required the approach span girders to be pulled back the same amount behind their normal positions.

How the Arches Were Erected

The erection of the two cantilevers proceeded as nearly simultaneously as possible with one derrick car on each



The Erection of the Approach Span Girders Was a Difficult Task

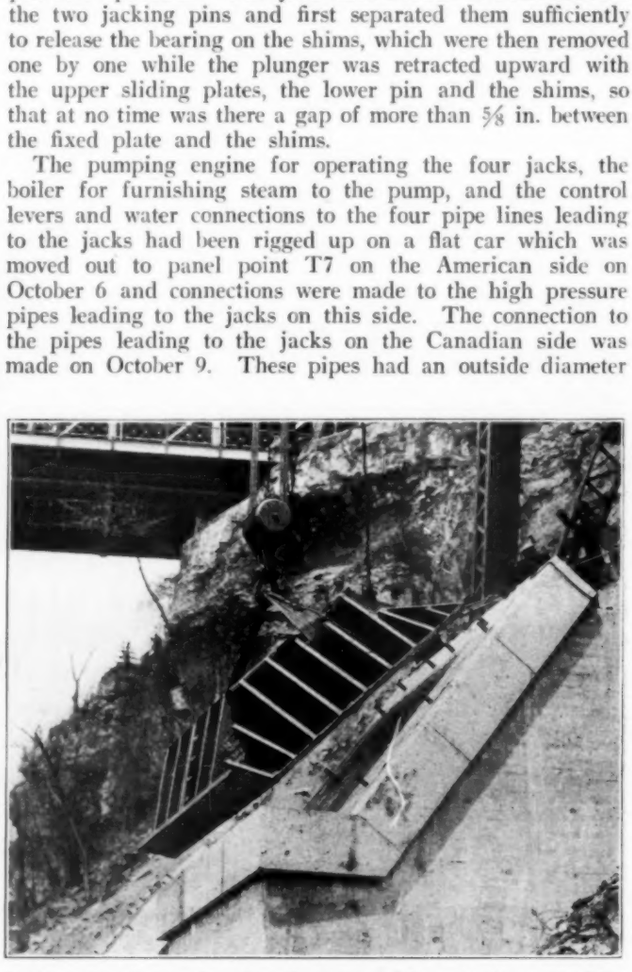
arm. As the structure was double-tracked, the cars alternated from one track to the other in placing the members in the two trusses, the members being brought forward on trucks on the other track. The normal procedure was as follows: After completing the erection of the floor for one panel, the derrick car, from its position on one of the tracks, erected the bottom chord section for the next panel on that side. Owing to the fact that the bottom chord splices are 100 per cent riveted the bottom chord members could be safely supported as a cantilever from the joint just as soon as the joint had been fully bolted and pinned and thus release the fall line for the erection of the diagonal which was placed next. Following this, the derrick car was transferred to the second track to place the bottom chord and diagonal on that side; the bottom laterals and strut and the post and top chord on that side. The derrick car was then moved to the first track for the erection of the post and top chord on that side, the cross frame and top laterals. The floor system for the panel was then erected from the same position of the derrick floor.

The Closing Operations

The closing gap between the ends of the completed half arches was accomplished by means of four hydraulic jacks, one for each backstay. The capacity of each of these jacks was 3,000 tons and they had been tested in the storage yard at the bridge site to 2,500 tons, which was about 25 per cent more than the required load. A jack was located at the center of each backstay between two pairs of sliding plates, of which one pair was in fixed connection with the anchorage, by way of the lower half of the backstay, and the other pair of plates was connected to the end of the top chord by way of the upper half of the backstay. Two pins, specially designed to bear on the plunger end and the base of the jack, transferred the stress from the jack to the plates. The upper of these pins was fixed to the plates attached to the anchorage and was sliding in slotted holes in the plates attached to the end of the top chord. The sliding condition for the lower jacking pin was the reverse.

At the time the backstay was erected the slotted holes in one pair of sliding plates were filled out to pin bearing with ½ in. shims, there being 28 shims in each plate, so that the jacking pin at this point transferred the backstay stress directly to the other sliding plate until the jack was put into operation. The jack then became a strut between the two jacking pins and first separated them sufficiently to release the bearing on the shims, which were then removed one by one while the plunger was retracted upward with the upper sliding plates, the lower pin and the shims, so that at no time was there a gap of more than ⅝ in. between the fixed plate and the shims.

The pumping engine for operating the four jacks, the boiler for furnishing steam to the pump, and the control levers and water connections to the four pipe lines leading to the jacks had been rigged up on a flat car which was moved out to panel point T7 on the American side on October 6 and connections were made to the high pressure pipes leading to the jacks on this side. The connection to the pipes leading to the jacks on the Canadian side was made on October 9. These pipes had an outside diameter



Setting the Lower Bearing Casting on One of the Arch Pier Skewbacks

of one inch and an inside diameter of ¼ in. The pump, which was specially designed for this job, was a double-acting, steam driven pump with four pistons, one for each of the four pipe lines leading to the jacks. Each of these pipe lines was fitted with a mercury gage on the connection to the pump registering the pressure on each jack and the control was so arranged that the jacks could be operated simultaneously or each separately as required.

Telephonic connection was maintained between the engineer having charge of the removal of the shims. From the outer sliding plates in the backstays at each end of the bridge and the engineer in charge of the control of the pump at the center of the bridge. The engineer at the

center of the bridge also had a full view of the ends of each half span, so that he was in direct control of all operations. Two valves were provided at each jack, one designed to act instantaneously and the other a safety valve with a 1/32 in. opening designed to release the pressure gradually. This was later found too slow and after having used it in testing out the piping and connections, it was removed for the final closing operation. The operating pressure was a little above 3,000 lb. per sq. in. The diameter of the jack plunger was 39 in., giving a total jack pressure of 3,600,000 lb., equal to the pull in the backstay after the derrick car had been moved off the bridge.

At 3:20 p. m., October 9, the American side was tried out by taking out one shim but on account of the small opening of the safety valve the half arch had only moved a fraction of an inch by 4:30 o'clock. The safety valves were then removed and the lowering of the American half of the arch was continued. By 5:30 p. m. the end of the half span had been lowered 4½ in. and moved westward two inches. Lowering of the Canadian half of the arch was started on October 10 at 7 a. m. and by 9 o'clock, four shims had been removed. The jacks on the American side were then put into operation and both halves of the arch were lowered at the same time until 11:30 a. m. There was then one inch clearance between the center pin and the pin hole at the crown of the arch. The operation of the jacks was then stopped and the ends of the trusses were

An Early Stage in the Erection of the Arch on the United States Side

lined up with little effort. As soon as this was done the placing of the splice plates at the center joint of the bottom chord was started. These plates were very difficult to enter and the work had not been finished by 6 p. m.

The placing of the splice plates at the center joint and bolting them to the Canadian half of the arch was resumed on the following morning.

The bottom chord bracing was also placed in panel B7 B8 of the U. S. half of the arch, which was connected only at panel point B7. Lowering was resumed in the afternoon but in pumping up the jacks a leak was found on the Canadian side and it was 4 o'clock before the final closing operation was started. The two halves then moved together at a rate of ½ in. in 6 min. When the pins were bearing and the pressure had dropped to 2,100 lb. per sq. in. the lowering operation was again stopped, holding the pressure on the jacks, while the lateral bracing was connected and the splice plates at the center joint were being bolted up, using 1-in. bolts in the 1¼-in. holes in the American side of the joint. By 5 o'clock this was finished and the slacking off of the jacks continued. By 5:05 the pressure on the jacks had dropped to 1,800 lb. per sq. in. and by 5:10 the pressure was zero and the structure had become self-supporting as a three-hinged arch.

While the closing operation took considerable time the whole operation was very satisfactory and the movements and deflections followed the calculated movements very closely. By October 15 the center posts and the two center

Installing a Part of the Back Stay in the South Tunnel on the Canadian Side. The North Tunnel Is Seen at the Right

panels of the top chord of the arch truss and the lateral sway bracing had been placed and everything was ready for changing the arch from the three-hinged to a two-hinged condition. For this purpose a screw 7 in. in diameter by 6 ft. long, provided with two nuts at each end, bearing on diaphragms riveted to the top chords on each side of the center joint had been furnished. The closing temperature desired was 60 deg., which was obtained at 4 p. m. on October 15, making it necessary only to screw the nuts up tight against the diaphragms and proceed with the drilling of the rivet holes which had been left blank in the top cord and in the gusset plate connecting the center post at B8 for this purpose on one side of the center joint. These holes have since been drilled, the rivets have been partly driven and the floor has been erected on the center panels so that the steel work is practically complete except for riveting.

The trusses were laid out at the shop with a camber equal to the deflection under dead load plus one-half of the live load on the whole length of the bridge. The full riveted splices in the bottom chord necessarily entailed long, heavy

splice plates on both sides of the webs, but this did not lead to any difficulty in making the joints in erection.

The necessity for long rivet grips in many of the splices was made the subject of considerable study with particular reference to the difficulty of securing tight rivets and the tendency of the joint to "pack out" due to the thickness of the paint coating between the plates. A series of tests made by the railroad showed that the value of the interplate painting is largely destroyed by the heat of large rivets which burn out the oil, leaving only the inert pigment. This led to the decision to substitute a special coating known as "Hipo" oil for the shop coat on all field splices. This material gives a much thinner film over the plates, thereby favoring a much tighter packing of the splices, yet affording adequate protection to the steel for the short time that it is exposed to the weather previous to erection.

Provision was made for strain-gage measurements on all main members of the trusses and in the backstays and at the portals of the tunnels. Points for the strain gage were provided at both ends and the center of each member on both sides, but only those on the Canadian half of the north truss were designed for permanent use. The permanent points are at the bottom of ⅜-in. tap holes 5/16 in. deep, into which are screwed plugs to protect the points. The temporary points are drilled directly into the metal of the members and are only protected from the weather by a covering of tape, painted over with red lead. "No-load" readings were taken and recorded on all points of the members before erection.

In addition to strain-gage readings on the backstays, a complete set of measurements was taken of the position of all panel points in three dimensions after the complete erection of each added panel in the cantilever arms. These were checked against charts showing the calculated position of each point for the corresponding temperature and loading. To eliminate from these measurements the warping effect of unequal temperature on the two sides of the structure on account of sunlight, all measurements and readings were taken as early in the morning as conditions of light would permit.

The design of this bridge was developed under the direction of H. Ibsen, bridge engineer of the Michigan Central assisted by C. L. Christensen, assistant bridge engineer. The project has been handled under the general direction of J. F. Deimling, chief engineer of the Michigan Central at Detroit, Mich. Olaf Hoff, consulting engineer, 5 Church street, New York City, has acted as advisory engineer on the project. The construction has been carried out under the direction of J. H. Curtin, resident engineer, and under the general supervision of Mr. Ibsen.

Annual Accident Bulletin for 1923

THE INTERSTATE COMMERCE COMMISSION has issued Accident Bulletin No. 92, consisting of over 100 large pages, containing the record of collisions, derailments and other accidents occuring on the railroads of the United States during the 12 months ending with December 31, 1923.* The total number of casualties in the tables for 1923 is 179,097; made up of 7,385 persons killed and 171,712 injured. The various classes of accidents and casualties are analyzed in great detail, as in preceding years, with minute classification of causes of accidents. Most of the totals of 1923 are larger than those of 1922. The business done by the railroads was greater, as measured by the number of locomotive miles, which in 1923 aggregated 1,813 millions; while in 1922 the total was 1,600 millions; and, as stated in the bulletin, the "increased exposure" in 1923 is generally reflected in the statistics.

To this, however, there is an exception, the item of passengers killed and injured. The decrease in passenger fatalities is called "a conspicuous feature," the total, 138, being the lowest on record, though the number of passenger miles was 7.2 per cent more than in 1922. A table is given showing the total number of passengers killed from all causes, for a series of years. A part of this table is quoted below (Table D) the figures taken from the bulletin being shown in column A. The number of passengers killed in

*The last annual statistical bulletin, No. 87, was noticed in the *Railway Age* of September 29, 1923, page 594, and the one preceding that on October 7, 1922, page 652.

TABLE A—CASUALTIES TO PERSONS IN RAILROAD ACCIDENTS—FOUR YEARS

	1923		1922		1921		1920	
Passengers	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
In train accidents	54	2,949	106	3,101	110	2,601	95	4,631
In train service accidents	105	3,572	119	3,703	116	3,543	169	3,825
Total	159	6,521	225	6,804	226	6,144	264	8,456
Employees on duty								
In train accidents	275	1,939	253	1,711	195	1,296	422	3,385
In train service accidents	1,288	37,537	988	30,480	901	27,228	1,685	43,535
Total	1,563	39,476	1,241	32,191	1,096	28,524	2,107	46,920
Total (a) passengers and (b) employees on duty	1,722	45,997	1,466	38,995	1,322	34,668	2,371	55,376
Employees not on duty	82	258	57	243	41	223	91	314
Other persons, not trespassing								
In train accidents	29	165	7	26	3	16	11	86
In train service accidents*	2,310	6,997	1,891	5,881	1,740	5,346	1,856	5,642
Total	2,339	7,162	1,898	5,907	1,743	5,362	1,867	5,728
Trespassers†								
In train accidents	52	85	47	58	49	141	48	77
In train service accidents	2,727	2,962	2,383	2,786	2,432	2,930	2,118	2,291
Total	2,779	3,047	2,430	2,844	2,481	3,071	2,166	2,368
Total in train and train service accidents	6,922	56,464	5,851	47,989	5,587	43,324	6,495	63,786
Non-train accidents	463	115,248	474	86,882	409	77,361	463	104,522
Grand total	7,385	171,712	6,325	134,871	5,996	120,685	6,958	168,308

*This item includes the bulk of the casualties at highway grade crossings. In some cases, however, the victims are classed as trespassers; and some of the accidents are included in train accidents.

†A small percentage of the persons classed as trespassers represents employees.

train accidents is, however, of more particular interest to railroad officers and therefore we have added to the table column B, where the contrast with preceding records is still more pronounced.

The difference between the total number of passengers killed from all causes, including their own carelessness, and the total killed in train accidents is greater, however, than appears from a comparison between columns A and B, for column B includes "persons carried under contract" such as mail clerks, express messengers and sleeping-car employees, whereas the figures given in the bulletin (column A) do not include these.

The damage to railroad property caused by collisions, derailments, etc. (shown in Table B), is decidedly heavier than in either of the two years preceding, though the total is still below the enormous sum reported in 1920.

As in former bulletins the statistics of fatalities of highway grade crossings are recorded in great detail; and the totals increase year by year, as is to be expected. For four years the crossing casualties have been:

TABLE B—TOTAL NUMBER OF TRAIN ACCIDENTS—FOUR YEARS

	1923				1922				1921				1920			
	No.	Damage	Killed	Injured	No.	Damage	Killed	Injured	No.	Damage	Killed	Injured	No.	Damage	Killed	Injured
Collisions	7,115	$6,904,900	134	2,396	5,611	$6,176,780	195	2,536	5,102	$4,657,390	130	1,839	10,110	$9,078,110	253	3,840
Derailments	16,708	18,396,050	215	2,479	13,155	14,969,250	187	2,226	13,615	16,518,440	132	1,854	22,477	22,987,790	194	3,549
Other train accidents	3,674	2,323,930	63	283	2,826	1,722,510	34	160	2,534	1,577,520	47	231	3,726	2,063,960	89	743
Total	27,497	$27,624,880	412	5,158	21,592	$22,868,540	416	4,922	21,251	$22,753,350	309	3,924	36,313	$34,129,860	536	8,132

TABLE C.—PERSONS KILLED AND INJURED AT HIGHWAY GRADE CROSSINGS

	Non trespassers		Trespassers		Total	
Year	Killed	Injured	Killed	Injured	Killed	Injured
1923	2,135	6,166	133	148	2,268	6,314
1922	1,714	5,220	96	163	1,810	5,383
1921	1,599	4,702	106	166	1,705	4,868
1920	1,691	4,804	100	273	1,791	5,077

Not all of these are automobile accidents. (See also, note at bottom of Table A.)

The bulletin contains the usual full and detailed analyses of all data in the record. Twenty-four pages are given to statistics showing totals of casualties by roads. An elaborate table, filling four pages, shows casualties to trespassers in each state of the Union, divided into trespassers injured in train or train service accidents; trespassers walking along the tracks; crossing the tracks at public crossings; at other places; and so on. These classes are further subdivided under:

Persons 14 years of age; 14 to 21 years of age; tramps; etc. Train and train accidents are also classified by states, showing the percentage in each state. The tabulation of trainmen, are shown separately for passenger service, freight service and yard service.

TABLE D.—PASSENGERS KILLED ON THE RAILROADS OF THE UNITED STATES

Year ending	Total passengers killed A	Passengers killed in train accidents B
Dec. 31, 1923	138	54
Dec. 31, 1922	200	106
Dec. 31, 1921	205	110
Dec. 31, 1920	229	95
Dec. 31, 1919	273	110
Dec. 31, 1918	471	286
Dec. 31, 1917	301	131
*Dec. 31, 1916	246	111
*June 30, 1916	239	141
June 30, 1915	199	89
June 30, 1914	132	85
June 30, 1913	350	181
June 30, 1912	283	139
June 30, 1911	299	142
June 30, 1910	324	217
June 30, 1909	253	131

* Overlapping reports, each for 12 months.

The last table in the appendix, that showing the number of grade crossings on Class I roads on December 31, 1923, gives the total of these crossings as 258,786. This includes 10,358 with other railways 4,643 with electric railways and 243,785 with highways. The statement says that 1,130 crossings were eliminated in the year 1923, and yet the total is 2,424 greater than the total reported in the last preceding bulletin. The total number of crossings classed as protected is 39,587; unprotected 219,199. This separation of protected from unprotected does not explain what portion consists of railroad crossings or what of highway crossings. Of the crossings eliminated in the year under review, 60 were crossings with steam railroads; 98 with electric lines and 972 with highways.

Comparisons with the totals of former years appear in the first or general table (summary No. 20) and in various diagrams; but the detail tables are confined to 1923. In the brief appendix, however, many tables run back from 12 to 35 years. These show the principal totals, including percentages of employees killed and injured in proportion to the number in service, and percentages of passengers in proportion to the number carried. These comparisons, as affected by a regular analysis of the causes of train service accidents fills 16 pages.

Lease of Industrial Road Denied

WASHINGTON, D. C.

THE INTERSTATE COMMERCE COMMISSION, Division 4, in a decision dated October 29 has denied the application of the Susquehanna & New York to acquire control by lease of the Tionesta Valley, in spite of the fact that the lease had been approved by the Pennsylvania Public Service Commission and no objection was made to it, on the ground that so long as the Tionesta Company is controlled by an industry which furnishes the major portion of its traffic (the Central Leather Company, which also controls the Susquehanna & New York) "it is highly desirable that a separate record should be kept of its operations." The report remarks that "experience has shown that such industrial common carriers may be and frequently have been, used as a medium of granting through the medium of divisions what are, in effect, rebates to the controlling industry" and that the intermingling of accounts under the proposed lease would render it still more difficult, without a special accounting investigation, to ascertain whether or not the connecting lines are in effect granting unlawful preferences to the controlling and affiliated industries. The commission refers to the economies to be effected by the lease as "rather vague and trifling," as the two roads, 46 and 40 miles, respectively, are separated by over 100 miles and the companies now have several officers in common. The commission also points out, without saying how much weight was attributed to the fact in reaching its decision, that the Tionesta "evidently is a carrier whose income may be subject to recapture" and that if the lease were made effective any surplus earnings would be available for the use of the

applicant Susquehanna & New York, which has been operating at a deficit.

Commissioner Potter filed a vigorous dissenting opinion saying that while the amount involved is not large the principle is a very important one, that the commission is not justified in assuming that the owners of these properties will manage them improperly and that the recapture clause was not intended to be a money-making scheme for the government. Commissioner Eastman replied to this in a separate concurring opinion in which he expressed the opinion that the control of the two railroads by the leather company is in violation of the commodities clause and that so long as the Tionesta company is maintained as a separate carrier the spot-light of publicity is thrown upon its affairs. Commissioner Potter said in part:

In view of the complete control of both properties in the same ownership and their officers and directors in common, it would seem that single, rather than duplicate officers, directors, books, accounts, meetings, minutes, reports, etc., would be in the interest of simplicity and economy, saving time and money. The experiences of the business world, showing savings that result from concentrated management, by one organization, of several industries of similar character, indicate that such a concentration respecting the two companies before us would result in substantial savings. That this step has not been taken heretofore may be a just cause for censure, but is not a reason for preventing it being taken now. Long persistence in error may make eradication difficult, but does not justify continuing the error. In the present day there is a new drive on for efficiency and economy—for the discovery of wasteful errors which can be corrected.

Nor does the fact that these two properties are owned by the Central Leather Company justify a treatment which would not be justified if the properties were owned otherwise. There is nothing in the law which applies one rule to properties when under one ownership, and another when owned separately. These properties have been recognized as common carriers and have all the rights and duties of common carriers. We may correct any abuse which flows from any particular ownership, industrial or otherwise. We should do that whether the properties are operated by one company or by two. But for the purpose of this application the ownership is immaterial. We may not like to have stockholders of railroads engage in the leather business, or a particular business, but the law has not prohibited it. Nor have we been given jurisdiction to determine who shall own railroads or business enterprises, or to curb them in exercising rights lawfully possessed, because we do not like their owners. We are not justified in assuming that the owners of these properties will manage them improperly.

The idea of economy through concentrated single management where possible is in harmony with the times and should be encouraged. If all of the short line railways of the country were brought together into a few companies with the resulting savings in overhead management which seem certain, and so that the strong could supplement and sustain the weak, it would be a great step forward towards the elimination of a serious aspect of the so-called railway problem. That, too, would be exactly in line with the consolidation provisions of the transportation act. I am apprehensive that the majority report in the policy which it announces will encourage the continuance of wasteful and inefficient conditions when it is of the utmost importance that we exert our every influence in the other direction.

If the lease were made it would not only be no more difficult than now to ascertain whether any particular division were excessive, but would be no more difficult than to determine the propriety of any division on any large system. We have not found ourselves impotent in this regard. The law directs what considerations shall control divisions. They depend largely on service, although under the present law general carrier condition and the amount essential for a fair return must be considered. It is apparently true that were these two properties merged into one system, the divisions one should and could receive would be larger because of the infirmity of the other. This fact is no reason for preventing an association otherwise proper. To bring about association among carriers whereby the strong will aid the weak is one of the important purposes of the transportation act. If the application of the law to a system would work out to a result different from the result of its application to separate units, that fact would not justify keeping the properties separate. Property owners, so long as they conform to law, have the right to adjust their ownership and relation so as to enjoy the most favorable applications of the law. This continually is done in all sorts of situations and is consistently sanctioned by the courts. It is plain right and duty to shape situations so as to come within the most favorable law.

If to bring a separate property into a system would be objectionable because of bringing about a supposed increase of divisions, or increased difficulty in determining their propriety, that would be a sound reason why leases and consolidations should never be authorized. The fact is that the laws of all the states have always favored them and they have been made a keystone purpose of the transportation act.

As to the recapture aspect the report states that another matter "to be considered" is the effect of the lease in the matter of recapture of excess earnings. In other words, if the properties remain separate the government may be entitled to have a part of the earnings of one of them, and if the lease is made, it will not. That is not a proper reason for preventing the lease. The reasoning evinces a misinterpretation of the law and a misconception of our function. We are not to grant or to withhold a permission according to whether or not it makes money for the contingent fund of 15a. The amount to be recaptured for a period is to be determined by the conditions that prevailed during that period. It is not to be determined years before by preventing something from being done which, it is thought, might prevent the creation of a recapturable fund. We represent the regulated interest just as much as we represent the regulating power. The recapture provision of the law is not a matter lawfully or properly "to be considered" in determining whether the lease shall have our sanction. We should do our job and let those provisions apply as they may to what is done. The recapture provision was not intended to be a money-making scheme for the government. A lease otherwise proper can not become improper because it reduces the amount subject to recapture. The law contemplates leases and consolidations. It encourages them and directs us to aid them for the very purpose of transferring excess earnings to weak lines and preventing them from going to the government. When the consolidation provisions of the act are carried out and the rate-making provisions of the law thereby become fully effective, there will be no excess earnings, the otherwise excess of the strong being used to carry the weak, which is what the law seeks to bring about. The present plan respecting the carriers before us is exactly in line with that law and tends to accomplish just what the law aims at. The majority report is directly in conflict with that law. A fair return on all essential railway property is contemplated. The lease would make for that result as to these properties and any excess would be recaptured by the government.

What the law contemplates is that leases and consolidations shall be accomplished as rapidly as may be and as good judgment suggests, from the standpoint of efficiency and economy in maintaining and operating the transportation system. After the contemplated amalgamations are accomplished the recapture provisions will apply to excess earnings. They do not justify preventing the amalgamations.

The worst aspect of the majority report is that seemingly it is a let-down from the important principle that in passing on a question of public interest we must give weight to the desirability of leaving industry as free from regulation as possible. Of course, nothing should be done at any time that is not in the public interest. But it must be remembered that it is in the public inerest to keep individuals and enterprises that make up the public free to do what they please so long as they do not injure the rest of the public or invade their rights. Restraint by regulation in the abstract is abhorrent. It never should be indulged in except in the presence of plain necessity to insure regard for public rights. Proper regulation is not to take control of the exercise of private rights, but only to say what may not be done because it invades the public right. As a basic principle liberty and freedom to the individual is the rule. Interference by regulation is the exception to be closely construed and given the most restricted application.

One of the great menaces of the present day is the blight of regulation. It is essential that those in charge of it should dread their power and constantly be alert lest they misuse it. Power grows by exercise. Official impulse is to reach out. We must always be on guard against ourselves. Even where we have the power we should let enterprises alone and permit them to do what they please and, particularly, what the laws and officials of their states sanction, unless the prospective injury to the public interest is clear and unmistakable. This is especially true where general powers are conferred upon us. The intent is not to put industry into a strait jacket or to interfere or upset. A general requirement that our approval, as being in the public interest be obtained, does not make the act inherently unlawful, or change the rules for determining the public interest.

The basic assumption of taint because of identity of interests between the railways and the Leather company is fundamentally wrong. It is such stretching of the law in reaching out for power that is deplored. The commodities clause has no application to the question now before us. That clause prohibits transportation by a railroad of commodities other than timber "produced by it or under its authority, or which it may own in whole or in part, or in which it may have any interest, direct or indirect." There is no suggestion in the instant case that the railways have any interest in the products of the Leather company.

The Labor Policy of the Baltimore & Ohio*

"An Earnest Determination to Deal Fairly with Each Other, Using Agencies Most Likely to Secure the Desired Results"

By Daniel Willard
President, Baltimore & Ohio Railroad

THE LAST TIME I addressed an audience at Garrett, September 1, 1922, a condition of industrial strife existed on nearly all the railroads, including the Baltimore & Ohio, due to the general strike of the shop craftsmen which began on the first of the previous July. The Baltimore & Ohio had endeavored conscientiously to comply with all the requirements of the labor provisions of the Transportation Act, and had not sought by evasion or arrangement of any kind to escape any of the provisions of the act or any of the orders issued by the Labor Board. We were willing, and had been from the very first day of the strike, to take back the men who had left the service, unwisely, as we thought, and were willing to pay them the wages fixed by the Labor Board, and were willing also to do everything that was practicable and right towards bringing about a satisfactory readjustment of all relations. I urged a settlement on that basis when I was in Garrett. Two weeks later a settlement was reached between the Baltimore & Ohio and its employees on substantially the same basis which I had suggested here in Garrett.

It was feared by some that it would be very difficult, if not impossible, under the terms of the so-called Baltimore agreement, to restore a satisfactory relationship between the companies and the striking employees; nevertheless, the officers representing the Baltimore & Ohio, as well as the representatives of the employees, took hold of the matter with a firm determination to bring about a real settlement, and I think it is a fair statement that the settlement which was made in Baltimore on September 15, 1922, has not only restored the amicable relations which existed between the Baltimore & Ohio and its employees before the strike, but that such relationship is even closer and more sympathetic today than ever before, so far as I know, in the history of the company. This should be sufficient to justify both parties in their joint action to bring about the settlement.

An Unusual Suggestion

Some weeks before the strike of 1922, W. H. Johnston, president of the Machinists' Union, and O. S. Beyer, Jr., an engineer of high reputation and broad experience, called at my office in Baltimore and said that they would be glad to co-operate with the officers of the company in an attempt to develop a plan under which the workmen in the shops might co-operate in greater degree towards improving the efficiency of the operations. Such a suggestion coming from such a source was most unusual, in fact was unique in my experience. However, the suggestion was accepted in good faith and a plan had been worked out to put it into effect some weeks before the beginning of the strike of the shop-crafts in 1922. After the strike had been settled and things had begun to move again in a more normal manner, discussion of the subject of co-operation was renewed and arrangements were made to give the plan a trial at our Glenwood shops located near Pittsburgh. Once more I wish to make acknowledgment of the effective co-operation which we received from the very first from the men chosen to represent our employees, as well as from the grand officers of the respective unions. Before a very long time had elapsed we could see that we were also beginning to get the earnest co-operation of the men themselves. It was too much to expect that such a new and novel idea would be accepted in its entirety and all at once.

The experiment—and I looked upon it largely as an experiment at first—was continued for about a year at the Glenwood shops. During all that time we were getting additional experience; we were developing new angles of the problem, and at the same time working out their solution, but after the experiment had been running a year it was decided that there was at least enough merit in the plan to justify its extension to the principal shops all over the Baltimore & Ohio System, and on February 25, 1924, an agreement was entered into between the officers of the Baltimore & Ohio and the officers representing the federated shop-crafts in the Baltimore & Ohio service, which provided for the appointment of co-operative committees in 45 different shops. The agreement also provided that twice each month meetings of such committees should be held at stated times and places for the discussion of such matters as might properly come before them, the agreement itself enumerating the different subjects that might be taken up for discussion.

What Has Been Accomplished

Of course, we expected when the plan was extended to the entire system, that we might find objection at certain points on the part of some of the men, as well as reluctance on the part of some of the company officers, but the opposition was much less than we had anticipated. The arrangement contemplated an entirely new relationship which in turn demanded an entirely new and different point of view. The larger plan, however, has now been in effect about eight months, and I am going to give a brief report showing in simple outline what has been accomplished in that time.

In accordance with the agreement which I have already referred to and which was entered into between the Baltimore & Ohio management and its employees in February of this year, 657 meetings have been held between men representing the management and men representing the employees. The average attendance at such meetings was 12. The average length of meetings so held was 1½ hours. Total number of suggestions submitted for discussion, 5,272. Number of such suggestions adopted, 3,810. Per cent of those adopted to the total proposed, 72.2. Number of suggestions still under consideration but not disposed of, 972. Number postponed because the expense necessary to install them is not justified at the present time, 85. Number dropped because after full discussion they were considered impractical, 405.

Please bear in mind that this record of accomplishment refers only to one phase of the results which have been obtained from the new relationship developed in the Baltimore & Ohio service. The figures are sufficient, I think, to show that the plan in this particular aspect alone is a very real one. It has actually been put into effect, meetings have been and actually are being held at regular intervals, suggestions actually are being made by employees and officers for mutual discussion, and such suggestions really are

*From an address at Garrett, Ind., in commemoration of the fiftieth anniversary of the completion of the Baltimore & Ohio from Baltimore in the east, through Garrett, to Chicago in the west.

being given serious consideration; and, as I have just shown, during a period of less than eight months more than 3,800 suggestions out of 5,272 brought up for discussion at the meetings of the co-operative committees have actually been put into effect, and are today a part of the Baltimore & Ohio standard practice. These results of themselves more than justify the arrangement if nothing else had been accomplished, but, as I have already said, I have a feeling that the results indicated by these figures are really the least of all the accomplishments to be expected under the plan.

Sympathetic Understanding and Its Effect

First of all, the plan itself contemplates a full and sympathetic understanding between the management and the men concerning the problems confronting them in the Baltimore & Ohio service, and I believe that only with such an understanding is it possible to have a satisfactory relationship based upon mutual trust and confidence. The co-operative committees that have been formed between the managing officers and the men employed chiefly but not alone in the shop-crafts are simply one of the agencies made use of in giving effect to the policy above outlined. Frequent meetings between officers representing the management and groups of the different employees are also helpful and to be encouraged. In short, it may almost be said that the Baltimore & Ohio labor plan or policy which has been developed in conferences between the management and the men is little if anything more than an earnest determination on the part of each to deal honestly, fairly and sympathetically with the other, at the same time making use of such agencies or methods as seem most likely to secure the results mutually desired. When I speak of sympathetic understanding or relationship, I do not use the word sympathetic in any maudlin sense, but rather as indicating a mutual desire to maintain a relationship based upon a friendly understanding.

Now, what is the effect of such an understanding and of such a relationship? It seems to me that there can be only one answer to that question. It gives to every employee an enlightened and enlarged view of his own worth and importance as a part of the great organization known as the Baltimore & Ohio Railroad. It emphasizes to each man the importance of the work which he himself is doing, and the responsibility which goes with his job or position, and which rests upon him personally to do good work, to do honest and dependable work, not just because it is really his duty as an honest man to give good work in return for good wages paid in good money, but because, *realizing the responsibility which he shares with the management for the safe and proper operation of the railroad, he wants to do good work; he wants to do thorough and dependable work in order that he may fulfill the enlarged conception which he has of the responsibility which properly rests upon him as a part of the railroad organization.* In fact, I think it has come about that the workmen themselves in greater degree than ever before are doing and doing happily the best that is in them, not just because they feel they are *obliged* to do it, but rather because they *want* to do it, understanding and knowing that it is the right and creditable thing to do.

What an immeasurable difference there must be in the mental attitude, in the point of view of a man working under such circumstances, and one who without knowledge of the plans and ideals of his employer, without understanding and appreciation of the joint responsibilities which really rest upon both of them in their joint relation to the public, simply goes about his daily task feeling that he is obliged to do a certain amount of work in return for a certain amount of wages. How can a man working under such conditions be expected to take the keen, lively and personal interest in his work which makes all the difference between an employment that is irksome and tiring, and another that is stimulating and full of interest?

No Longer An Experiment

I believe that it has now been fully demonstrated that the co-operative plan which the Baltimore & Ohio has put into effect, in co-operation with its shop employees, and with the support of their respective unions, is no longer an experiment. It has more than justified itself from many different angles. It is now a part of the definitely adopted policy of the Baltimore & Ohio, and I have a feeling that we have not yet begun to realize the potential possibilities of the plan. As time goes on and as we develop and cement still further the understanding and relationship which has already grown up between the management and the men, I feel certain that the friendly and sympathetic efforts of both parties will discover and suggest new methods and new practices that will not only make for economy, and thereby enable the railroad to pay good wages and at the same time maintain satisfactory working conditions, but will also contribute towards giving to the public the lower rates for transportation service which they desire, but for which in my opinion they sometimes press with undue and unwise urgency.

I have heard men in railroad service say in times past when questions of wages and working conditions were being discussed, that they were not personally interested in the success of their company; that they would just as soon receive their pay check from a receiver appointed by the court as from a corporate officer of a railroad, meaning, of course, that even if the railroad were bankrupt, they would get their wages and be just as well paid. I think I can show that that is a very mistaken point of view. There are many men in the employ of the Baltimore & Ohio who have been in its service long enough to have had personal knowledge of what happens during periods of depression, as well as during periods of prosperity. When business is good and earnings satisfactory, shops, engines, cars and all facilities are worked to their full capacity, which of course means a full force of employees.

Wages More Than Money

When business begins to fall off, it is first evidenced by the number of empty cars standing around in yards and on side tracks; the number of engines withdrawn from service, which means fewer train and engine men; roundhouse forces reduced; back shop forces curtailed, and if the business continues dull for some time, shops may be and are frequently shut down completely. But if a period of poor earnings resulting either from a falling off of business or from inadequate rates should be prolonged, it will be noticed on most roads, if not all, that in the effort to still further reduce expenses, forces will be still further reduced, and then the following things will be noticed: The engines that are in service, while safe to run, and while meeting the requirements of legislation, will not be in as clean and satisfactory condition as when times are better. The shops will not be kept as clean, holes in the floor will not be repaired, the roof may leak, window panes may fall out, and gradually, but none the less certainly, it will come about that because of the things I have mentioned, and many others, accidents will occur more frequently, and men will get injured because tools, hoists and all that sort of thing get overstrained; working conditions become less attractive, less sanitary, less healthful, less safe—and who will say that a man had just as soon work under such conditions even if the pay were exactly the same as under conditions such as exist in the Garrett shop today, where the tools are all provided with the most approved safety devices, where the buildings are clean and orderly, well kept and sanitary; where a man can feel proud to work and

proud to take his friend and show him where he works?

It is indeed a mistake to feel that money alone represents everything that is included in the wage. Of course money is a very essential thing, and up to a certain point it is perhaps the most essential thing, because one must live and take care of his family, but there comes a time when money is not the most essential part of the wage which one receives. The conditions of employment, the comfort, convenience, health and stability of employment become involved, and these things or any of them might far outweigh in real value and comfort any slight or even considerable increase in wages. It is a mistake to think that the employees of a company, particularly of a railroad company, have not a personal interest in the prosperity of that company. They are vitally interested therein and they should *want* to see their company prosperous because it is in their own selfish interest that their company should prosper, and being fully advised concerning the affairs of the company —and that is a part of the present policy of the Baltimore & Ohio—and being given the fullest opportunity for self-expression, they ought individually and collectively to be able and willing to make a much greater contribution toward the prosperity of the company than would be the case if relations were not such as I believe exist on the Baltimore & Ohio at the present time.

Government Operation Obsolescent Says Acworth

Sir William Acworth, the well-known British railway expert, has written a letter to the editor of the Times (London) in which he characterizes the policy of the British Labor Party in advocating government ownership and exclusive public control of the railways as "the dull remainder biscuit of an obsolescent policy." The tendency in democratic countries where government operation has been tried, Sir William points out, is in the opposite direction, i.e., toward operation by a private or semi-private corporation. This letter, which was published in the Times of October 21, before the Labor Party had met defeat at the polls, follows in its entirety:

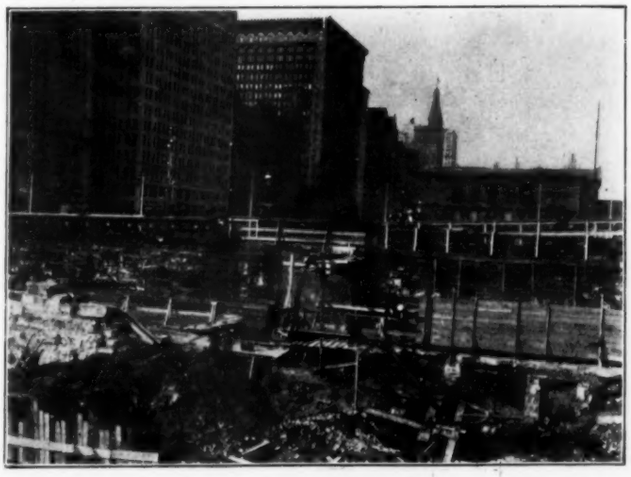
"It is interesting to notice that, while not a few of the proposals in the Labor program are, in Mr. Chamberlain's phrase, sufficiently 'harum-scarum' to satisfy their most advanced supporters, the party is in other respects chewing the dull remainder biscuit of an obsolescent policy. They have pronounced for 'an entirely unified railway and canal system in national ownership and under exclusive public control.' Now this exclusive public control is just what the democracies which have had practical experience are getting away from. In South Africa and in Switzerland the state railways have long been a separate undertaking outside the ordinary government organization, with the express object of withdrawing their budget and their management as far as possible from the control of Parliament and the politicians. The Austrian Republic followed suit a year ago; the German Republic last February; a Royal Commission has within the last few weeks recommended the same course in New South Wales.

"Other democracies have gone farther. Canada had for 50 years a railway, the Intercolonial, under exclusive public control. It was a by-word for extravagance, inefficiency, and political jobbery. In 1921 the management was transferred to the Canadian National Railways, an undertaking organized as a company, whose board of directors were at the outset at least appointed for their business capacity, and not as a reward for political services. About the same time in Holland, where the state had always had a large financial interest in the railways, the whole system was recast and the state entered into a frank partnership with the two important operating companies. The state is now the principal shareholder, with the corresponding right to nominate the majority of the board. But the management may be said to be under exclusive private control.

"This system, under which the public authority is the principal shareholder in the undertaking, exercises a general control, especially in large financial questions, but leaves the actual management to the ordinary shareholders, who are actuated by commercial motives, has become a commonplace in German cities for 'public utilities,' gas, electricity, tramways (i. e., street railways), and the like. It was well established before the war; it has greatly developed since. In Berlin, where the Socialists control the Municipal Council, the city owns the tramways, but they are organized as a company undertaking; it owns various extensions of the private Hochbahn (elevated railway), but leaves the working of them to the Hochbahn Company; it owns two-thirds of the capital of the Omnibus Company, the remaining third being owned by the Hochbahn. The gas undertaking is, I believe, subject to the same *régime*. In Hamburg the city owns the electric railways and tramways; but they, as also omnibus services, are operated by the Hamburg Electric Railway Company, whose manager is, as I am informed, entirely unfettered in the ordinary conduct of the whole undertaking. It may be added that both in New York and Paris the Underground Railways are owned by the city but operated by companies.

"Might one respectfully suggest to the Labor Party that, when they are returned with the sweeping majority which we are promised, they should take counsel with the *Zeitgeist* and go slow in the matter of exclusive public control of the means of transport? Perhaps, meanwhile, they might work out their scheme for some small and simple reform such as, for instance, the nationalization of the Bank of England."

The Interstate Commerce Commission has granted the petition of the Atchison, Topeka & Santa Fe for a modification of its train control orders so as to permit the automatic train control installation required by the first order to be made between Shopton, Ia., and Chillicothe, Ill., and that required by the second order to be made between Chillicothe and Chicago.



Construction of Subway Under Michigan Avenue, Chicago, at Van Buren Street to Relieve I. C. Suburban Passengers of the Necessity of Crossing This Busy Thoroughfare

Another Car Loading Record

WASHINGTON, D. C.

THE RECORD for the number of cars loaded with revenue freight in a week was again broken during the week ended October 25, with a total of 1,112,345 cars. This was an increase of over 10,000 cars as compared with the previous week, which established a new record, and also an increase of 38,504 cars as compared with the corresponding week of last year. New records for a week were also established in the loading of grain and grain products, 72,474 cars as compared with 71,134 cars during the week ended October 4, and in the loading of miscellaneous freight, 422,890 cars as compared with 418,234 cars the week before. Grain and grain products loading was 23,062 cars greater than that during the corresponding week of last year; merchandise loading showed an increase of 5,064 cars and miscellaneous loading showed an increase of 33,527 cars. All other classes of commodities showed reductions as compared with last year, the reduction in ore loading amounting to 15,518 cars, but the reductions were more than offset by the heavy loading of grain and miscellaneous. All districts showed increases as compared with last year except the Northwestern, in which the total was held down by the light loading of ore and decreases in some other items which offset the heavy increase in grain.

The summary as compiled by the Car Service Division of the American Railway Association is given in the table in the first column.

The freight car surplus for the period October 15-22 averaged 99,552, a decrease of 5,799 cars as compared with the week before. This included 46,476 coal cars and 27,535 box cars. The Canadian roads had a surplus of 5,600 cars, including 3,500 box cars.

REVENUE FREIGHT CAR LOADING

Week Ended Saturday, October 25, 1924

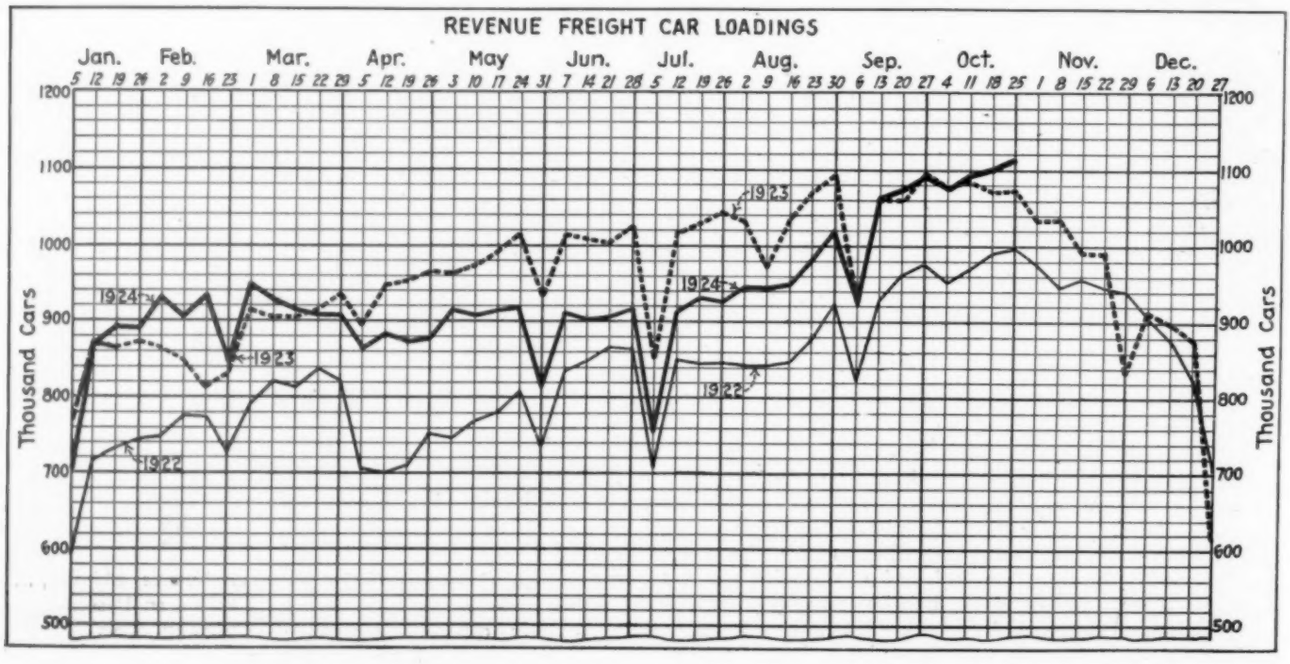
Districts	1924	1923	1922
Eastern	256,285	254,439	242,954
Allegheny	215,206	214,397	215,399
Pocahontas	53,687	44,025	30,804
Southern	155,845	147,529	135,530
Northwestern	167,031	168,009	148,854
Central Western	182,308	170,954	163,485
Southwestern	81,983	74,488	62,692
Total Western	431,322	413,451	375,031
Commodities			
Grain and grain products	72,474	49,412	51,284
Livestock	42,356	43,440	42,578
Coal	193,736	195,458	193,809
Coke	9,979	12,035	11,286
Forest products	73,257	76,026	60,205
Ore	40,026	55,544	47,850
Mdse., l. c. l.	257,627	252,563	232,008
Miscellaneous	422,890	389,363	360,698
Total	1,112,345	1,073,841	999,718
October 18	1,102,336	1,073,095	989,889
October 11	1,088,462	1,085,938	969,487
October 4	1,077,006	1,079,776	953,952
September 27	1,087,447	1,097,493	977,791
Cumulative total, January 1 to date	40,083,163	41,615,889	35,220,144

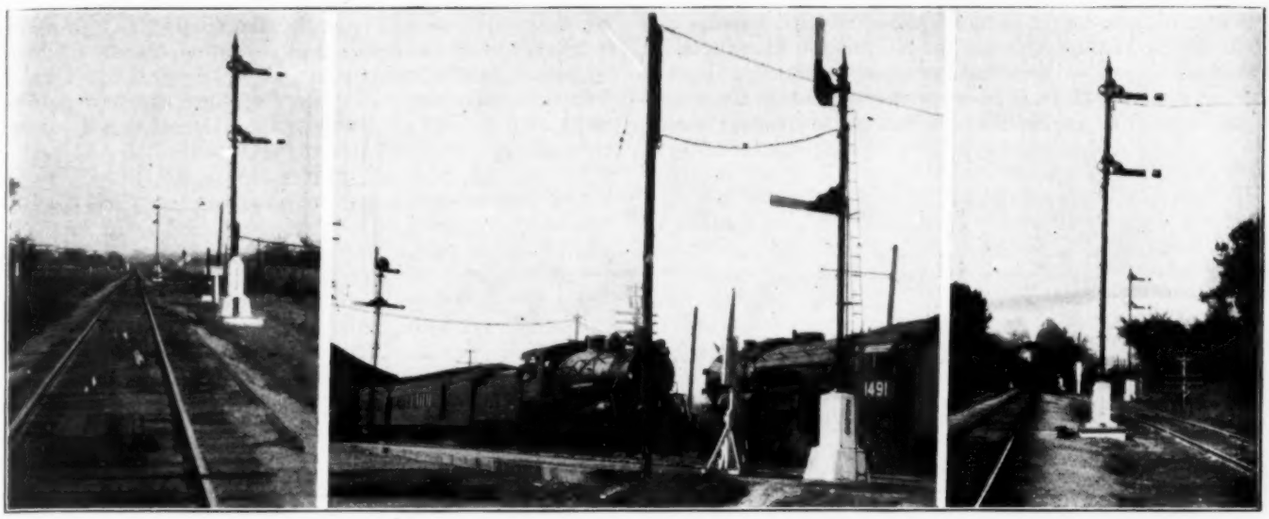
Canadian Car Loading Over Last Year's

Revenue car loadings at stations in Canada for the week ended October 25 showed not only an increase of 3,792 cars over the previous week but also an increase of 1,992 cars over the same week last year. The increase over the previous week was a seasonal increase in grain loading of 3,962 cars and also an increase of 763 cars in miscellaneous freight.

CARS OF REVENUE FREIGHT LOADED ON CANADIAN RAILWAYS

Total for Canada	For the Week Ended 1924		
Commodity	Oct. 11 Cars	Oct. 18 Cars	Oct. 25 Cars
Grain and Grain Products	15,942	16,448	20,410
Live Stock	2,863	3,091	3,013
Coal	7,391	7,561	7,061
Coke	319	259	240
Lumber	3,695	3,677	3,493
Pulpwood	1,576	1,504	1,334
Pulp and Paper	1,718	2,004	1,944
Other Forest Products	2,350	2,486	2,670
Ore	1,691	1,153	1,214
Merchandise l. c. l.	15,790	16,077	15,910
Miscellaneous	14,706	15,753	16,516
Total Cars Loaded	67,941	70,013	73,805
Total Cars Received from Connections	31,257	31,733	32,734
Total Cars Loaded for Corresponding Week, 1923	72,916	74,989	71,813
Cumulative Loading to Date—1924			2,364,223
1923			2,295,422





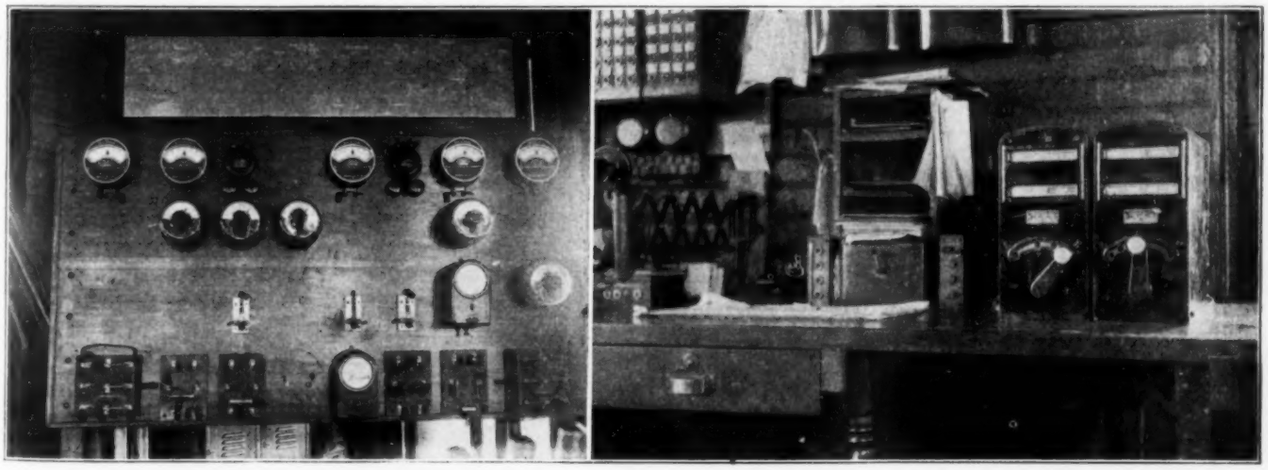
West End of Martin City Passing Track *Passenger Train on Main Line Passing Dodson with Train-Order Signal and Signal 2898—Clear* *East End of Kenneth Passing Track*

Controlled Manual Block with Train Control

Missouri Pacific Eliminates Train Orders by Directing Train Movements with Signal Indications

THE MISSOURI PACIFIC is now installing a system of controlled manual block signaling on 50 miles of single-track between Leeds, (Kansas City) Mo., and Osawatomie, Kan.; and superimposed on this block signaling is an automatic train control system which is being installed in compliance with the order of the Interstate Commerce Commission. The intermittent inductive train control of the National Safety Appliance Company was installed as a part of the wayside equipment, while 19 freight and 10 passenger locomotives have been equipped with the engine apparatus of the same manufacturer. Following the completion of the installation on the first 25 miles between Leeds, Mo., and Kenneth, Kan., representatives of the Interstate Commerce Commission made an official inspection between September 1 and September 12.

The complete signaling system provides for the movement of trains by signal indication, thereby reducing considerably the number of written train orders with the ultimate purpose of eliminating orders entirely. The directional control of train movements from station to station on this single track is provided by electric locking of the controlled manual levers in the stations. All of the signals are associated with the stations and passing tracks, no intermediate signals being used although distant signals are provided in some cases.



Switchboard in Tower at Kenneth

Desk Type Controlled Levers at Kenneth

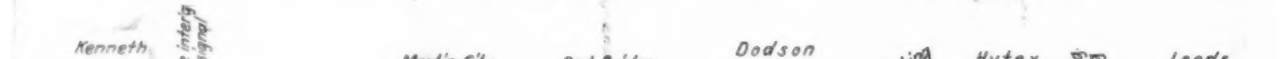
The controlled manual block has been superimposed on the previous manual block system without any increase in the personnel or rearrangement of the men manning the manual block offices. It is planned to relocate the sidings in accordance with the actual performance of an average train in a peak load period.

This single track division between Kansas City and Osawatomie, handles from 38 to 51 trains a day, including 10 scheduled passenger trains. A ruling grade of about 1

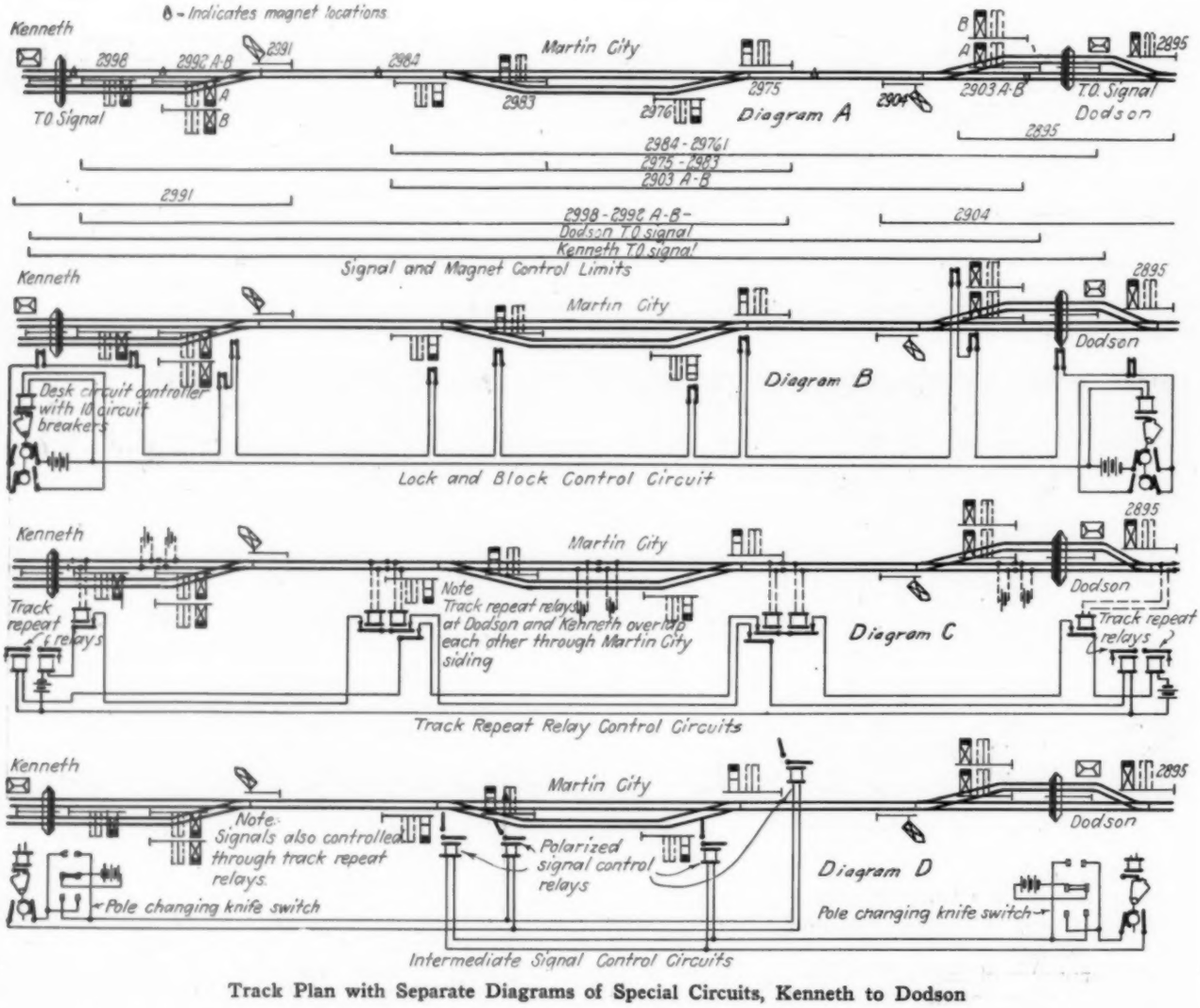
per cent in each direction in this 50-mile district limits the train load. The drawbar pull of the Mikado (1,400 class) locomotives used in this territory is approximately 70,000 lb. In the direction of heavy traffic the maximum grade is 20 miles from the initial terminal (Osawatomie); therefore full tonnage can be handled, with the assistance of a helper, which is cut off at Wagstaff. The line has numerous sharp curves that will necessitate heavy reconstruction when a second track becomes necessary.

The results desired by the present installation of signaling were: (1) to provide a section of automatic train control as required by the order of the Interstate Commerce Commission; (2) to increase the track capacity of this section of single track by rearranging the sidings and relocating the water stations and signals accordingly; (3) to direct the movement of trains by signal indication, thereby reducing the use of written train orders.

In the section now being signaled there are four passing tracks and the end of double track. Operators are located at Leeds, the end of double track on the Kansas City Terminal, at Dodson and at Kenneth. Train movements between Leeds and Dodson are directed by signal indication exclusively, the signals being cleared by the co-operative action of the operators at the two offices. Train movements into and out of Hytex passing track are likewise directed by signals which are under joint control from Leeds and Dodson. A similar system is used between Dodson and Kenneth. The wayside track magnets of the train control



Track and Signal Plan Showing Arrangement of Signaling at Passing Tracks



Track Plan with Separate Diagrams of Special Circuits, Kenneth to Dodson

system are located at the signals. Therefore, unless an attempt is made to pass a signal in the stop position, a train in a routine trip will not encounter an operation of the train control system, except at the two non-interlocked railroad crossings.

The Interstate Commerce Commission requisites for train control require either that a train must be stopped before reaching the home or stop signal when the latter is in the stop position, or else a stopping distance must be provided in the space covered after the train passes the signal. Without the forestalling device (paragraph 1-b) a stopping distance must be provided at a single track meeting point, which condition can be met (1) by extending the overlap on the main track inside the switch at which the inferior train takes the siding, or (2) by interlocking the switches at the inner end of a lap siding to give parallel moves, requiring trains to enter the sidings at the inner ends of the laps. The forestalling device on the locomotive is not used on the Missouri Pacific, therefore either the overlap inside the inferior switches or the interlocking of the lap switches is used.

There are two non-interlocked crossings between Leeds and Dodson at which the track magnets are permanently set to stop all trains in order to enforce obedience to the STOP sign. When a train must pass a stop signal to enter a siding the train stop apparatus will not be in effect to stop that train, provided the train is within a few feet of the switch before the route is changed.

Advantages of Lap Siding and Method of Operation

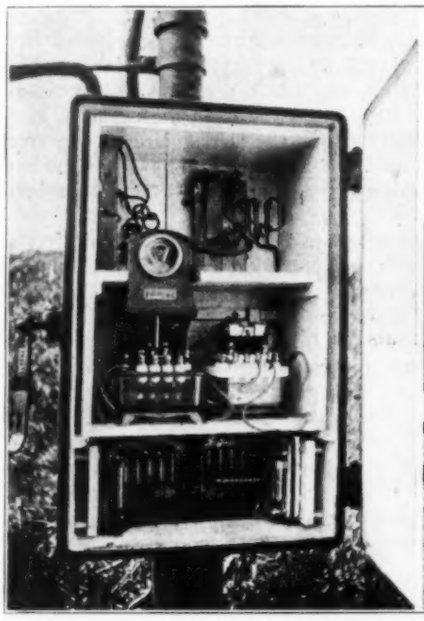
At meeting points the train enters the siding at the inner end of the lap siding. If the arrival of two opposing trains is separated by an appreciable interval of time so that the first train has had time to get in to clear, the other train is given the main line. If the trains arrive so closely together as to require it, both trains are diverted into their respective sidings. The switches at the near ends of the lap sidings are handled by mechanical levers in the telegraph office. It is planned that the operator shall control the switches at the outer ends of all passing tracks by means of power-operated switch machines (remote operation).

When a train is approaching a meeting point an indication is given of the track line-up at the lap switch by means of the distant signal at the outlying switch. This signal also governs the movement of an approaching train, if it should be desired that the train enter the siding at the outlying end, which case would occur if it were required that more than one train in the same direction should meet a superior train.

The lap siding with all switches handled by an operator provides a practical equivalent of an equal amount of double track.

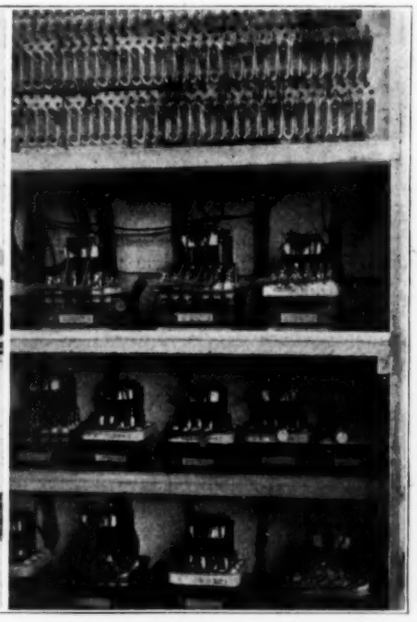
This has been shown to be the case by a circumstance in which, with four meets at one station, only one train out of eight was required to come to a stop. This result is, of course, brought about by the combination of the equivalent of double track of a length equal to twice each siding, with the fact that the inferiority of the trains at the meeting point is not established in advance by train order or time table. Instructions from the train dispatcher to take siding are, on the one hand, as a rule, issued to the trains by signal indication at the block station where the meet or pass is to be made; while at intermediate or blind sidings the train is stopped by a stop signal, bell, telephone or other indication at the head-block of the hand-thrown entering switch. Through the method of diverting to the siding the train which first arrives at the meeting point, there is the possibility of avoiding a stop not only for the opposing train which holds the main line but also for the other one, when the conditions are favorable.

The control of the use of the sidings is in the hands of the block operator under the direction of the train dispatcher, so that there need be no misunderstanding as to the arrangement of the meeting point insofar as the use of the siding



Typical Relay Case Showing Single Storage Cell Used for Track Battery and Time Element Relay to Control Speed Limits

Left to Right: L. C. Werthmuller, Assistant Signal Engineer; R. R. Ragland, Train Control Examiner; O. R. Unger, Signal Inspector, and T. W. Cheatham, Division Superintendent, Missouri Pacific



A Corner of the Relay Cabinet at Kenneth, Showing Track Repeat Relays, Control Relays, Terminal Arresters, etc.

is concerned. Superiority of the train from station to station is conferred by signal indication.

When a train is to take siding at the first switch, the stop signal is displayed. If the switch is hand-operated, the train is stopped and the trainmen get in touch with the operator by telephone or by bell signal for instructions. If the switch is handled by the operator (through a remote controlled low-voltage switch movement) a slow speed indication by semaphore dwarf signal is displayed after the switch has been properly set, for the train to enter the siding without stopping.

Where the location of the block office is some distance beyond the first switch of the siding and the block ahead is occupied, the caution or 45-deg. position of the high semaphore signal is displayed to the approaching train at the near switch so as to bring the train up on the main line to the block office for further instructions.

A continuous track circuit is provided from station to station. On this account it is necessary to inform the crew at the rear of the train whether or not superiority is conferred on the train at the entrance to the black. In order to do this the existing manual block (train-order) signal is retained and its operating lever is locked into and controlled by the signal system.

Extending out of the Kansas City terminals on the Omaha division of the Missouri Pacific, this same form of controlled manual block system has been in service for over a year. Since this installation there has been a marked increase in the traffic capacity of the single track covered and the necessity for double track appears to have been removed. The number of trains approximates that of the district between Kansas City and Osawatomie. The movement of trains on single track by direction of signal indications will now be explained by following through the instructions issued to the operator at Dodson.

INSTRUCTIONS FOR OPERATING CONTROL APPARATUS IN DODSON STATION FOR DODSON-KENNETH BLOCK

The knife switches must be open (normal position) and the lock and block instrument handle must be in the second position from the right.

Lining Up for a West-bound Movement

Move the handle of the machine in the direction traffic is to move. Close the three-pole switch in the direction traffic is to be moved, then ask Kenneth for an unlock (battery).

When the battery is received it will unlock the instrument, showing an unlock on the indicator. The handle is then to be moved to the extreme position to the left. If the train is to be moved on the main line, throw the two-pole, double-throw switch on the instrument board up. This will then clear signals 2895 and 2903-A. (See track and signal plan.) The train-order signal may then be cleared.

After the train has passed signal 2903-A and is in the block between Dodson and Martin City, the instrument handle should be moved one position to the right which is as far as it will go. After the train has cleared the block at Martin City, which is indicated by the block indicator on the instrument at Dodson, the handle should be restored to its normal position which is the second hole from the right. If the handle is not restored to its proper position while the train is in the block, it must be restored to its proper position and the clock-work time-release is operated in order to unlock the instrument. At Dodson, the hand-release is used only when locked up. It is not necessary for Kenneth to operate the hand-release. The knife-switches should be restored to normal position.

Lining Up for a Following (or Caution) Movement or Meet at Martin City

Move the handle of the machine in the direction traffic is to go. Close the three-pole switch in the direction traffic is to be moved. Throw the two-pole, double-throw switch on the instrument board up. This will clear signals 2895 and 2903-A to the caution or 45-deg. position. The train-order signal cannot be cleared for this move.

If a train is to be moved from the siding under either of the above conditions, the two-pole, double-throw switch on the instrument board should be thrown *down* instead of up. To restore the machine to normal, proceed as indicated above.

Lining Up for East Bound Movement

When Kenneth asks for "Unlock" place the handle of the instrument in the extreme right-hand position and throw the three-pole switch to the east or in the direction of traffic. When Kenneth receives battery, it will be indicated by the ammeter on the instrument board in Dodson station. After Kenneth has unlocked (indicated by the ammeter needle returning to zero), the two-pole, double-throw switch should be thrown down, which will clear signal 2984.

Lining Up for East Bound Movement from Martin City Siding

Place the handle of the instrument in the extreme right-hand position and throw the three-pole switch to the east, which is the direction of traffic. Throw the two-pole switch up and operate the clock-work time release which will set up the lineup so that signal 2976 will clear when the passing track switch is opened for the train to move out on the main line. Watch the ammeter needle, which will move up the scale as the signal is clearing. The needle must drop back slightly when the movement of the signal arm is complete.

Special Locking and Signal Control Circuits

A simplified track and signaling plan of the layout from Dodson to Kenneth is shown in diagram A of the circuit plan. All circuits from one block station to the next are electrically independent of the circuits in the adjacent block in either direction. The lock and block circuit, the track repeat control circuits and the intermediate signal control circuits are each shown on a separate diagram to prevent confusion.

As may be seen in diagram B, the control circuit for the lock of the desk circuit controller is carried through a circuit breaker on every signal concerned, closed when the signal is at stop. Therefore in order for Dodson to get an unlock all signals must be at stop and the operator at Kenneth must operate his controller to give battery to the controller at Dodson. The traffic direction locking in the block operation, together with the indication in the various sections of the block occupied, is secured by General Railway Signal Company's desk type circuit controllers. The train-order signals at Dodson are locked electrically while at Kenneth the train-order signals are operated by levers in the interlocking machine, which are equipped with standard electric locks.

As may be seen in the photograph the desk circuit controller has two separate indicators, one of which shows when the section from Dodson to Martin City is occupied and the other the section Martin City to Kenneth. These indications as well as the locking features are controlled by track repeat relay control circuits that are shown in diagram C.

Diagram D, which shows the intermediate signal control circuits, indicates how the electrically locked desk circuit controller and the knife switches are used to control the operation of the signals. Signals 2984 and 2976 are controlled over one pair of wires by means of the pole-changing switch. This combination is possible on account of the fact that there will be no occasion for these two signals to be cleared at the same time and as they control traffic in the same direction no harm can be done if the switch is thrown the wrong way. A study of these circuits shows that an operator is at all times controlling signals to move trains towards his station, which keeps the movement under his control.

How the Train Control Fits Into the Signaling

The track magnets are either 83 ft. in the rear of the home signal, or, where used for the two opposing signals of a double location which are not more than 350 ft. apart, the magnets are located so as to bisect the distance between the signals. Such a magnet location can be used for a stop in both directions and for speed control in both directions. The magnet located at a distant signal is used solely

for speed control either in the rear or in advance of the signal and is set properly with reference to the measured length of this track circuit so as to provide a different speed limitation in one direction from that in the other.

The relays for the speed control contain a clock-work mechanism operated electrically in combination with the magnets controlling the fixed contacts. The speed control of the relay is effected by breaking an electric contact through the clock-work as the train enters its track circuit and making this contact again by the clock-work at the end of the pre-determined time period. This time period, if greater than the time required by the train to move through the track circuit, will set in action a magnet to stop the train. The relay is set and sealed at its location for whatever speed is selected as the maximum to be permitted. The relays are specially designed to avoid the opening of the circuits through vibrations set up by passing trains or otherwise. Only two speed limits are provided, one of 35 m.p.h. approaching interlocked crossings or junctions, to test whether the engineman is alert, and one of 25 m.p.h. approaching other stop locations or points.

Where a magnet is located in advance of siding switch points a special circuit is provided which will permit trains to enter the siding without automatic application of the brakes, provided the switch has been opened after the train is within 400 ft. of the signal. Otherwise, the magnet will function to stop the train. In this manner open switch protection is provided.

Pole Line Construction

In constructing the pole line, creosoted pine poles, 25 ft. to 40 ft. in length over-all were used, spaced 35 to the mile. A two-pin, four-foot top cross-arm carries the two stranded aluminum conductors which have a steel core, and 7 strands of aluminum, making up a No. 4 aluminum cable. Second cross-arms, when required, are spaced 4 ft. and carry two No. 10 B. & S. gage hard-drawn copper, or copper-clad wires for the 110-volt circuits. The third arm spaced 2 ft. below the second, has 10 pins and carries the 7 wires of the system plus the local circuits at the stations when necessary. These wires are also No. 10 B. & S. copper or copper-clad.

The Kansas City Light & Power Company furnishes the power at Leeds station, a 2,200 volt circuit being metered and raised to 4,400 volts for line transmission. At the meter source, overload and underload circuit breakers are installed to guard the line in case of grounds, crosses or breaks caused by emergencies in railroad operation. It is so designed that a variation of 2 per cent either way in the load will cause the circuit breaker to open and ring a buzzer or bell to notify the operator in the Leeds station. If a break should occur, the circuit breaker will cut all power off the line immediately. This circuit breaker was designed for this particular operation by the Roller-Smith Company.

Where energy is required along the line for battery charging, 4,400 to 110-volt transformers of 1.5 kv.a. capacity are installed. A 110-volt line is constructed where the distances from the transformer is less than 2,000 ft. Thus it is not always necessary to use a separate transformer at each place where power is required. The reduction from the 110-volt circuit to either the 8, 16, or 24-volt signal lines is made by rectifiers, both to reduce the voltage and to change from a.c. to d.c. for the trickle charge signal circuit battery. Signal lights are carried on the a.c. side of the circuit at 8 volts and are automatically cut over to the storage battery when the power fails.

THE LOUISVILLE & NASHVILLE has established additional sleeping car service between Louisville, Ky., and Memphis, Tenn. A car leaves Louisville daily at 10:10 p. m., and arrives in Memphis the next morning at 8:45 a. m. Returning it leaves Memphis at 8:50 p. m., arriving at Louisville the next morning at 7:45 a. m.

Famous D. L. & W. Tunkhannock Viaduct—In Foreground, Old Right-of-Way, Now a Highway, "the Lackawanna Trail," Because of Easy Grades and Curvature One of Best Known in the East

Shippers Praise Transportation Service

Extracts from Minutes of Shippers' Advisory Boards Show Unanimous Commendation

WIDESPREAD COMMENDATION of the efficient transportation service and adequate car supply furnished by the railroads during the past two years while handling a record-breaking volume of traffic is to be found in the reports made at meetings of the Regional Shippers' Advisory Boards by the representative shippers who act as chairmen of the various commodity committees.

As a means of promoting co-operation between the railroads and the shippers for the purpose of insuring an adequate and satisfactory transportation service, the continental United States has been divided into thirteen operating districts, in ten of which there has already been organized a Regional Advisory Board. Organization of similar boards in the remaining three districts will be established in the near future. These boards are composed of shippers and their representatives and are distinctly representative of the public interest in transportation, no railroad man being included in their membership.

The boards are voluntary organizations, and, in the aggregate, have 5,500 members, taken from farmers, farm bureaus, farmers' unions, state granges, state commissions, industrial leaders, and other distributors and receivers of freight. Their primary duty is to keep informed of the transportation needs of their respective districts, to discuss and consider with representatives of the railroads their transportation problems, and to forecast and make known to the railroads the measure of transportation service necessary to meet the future requirements of the shippers.

The spokesmen of these organizations are, therefore, fully equipped to express the judgment of the public as a whole as to the adequacy of the transportation service which is being rendered by the railroads in their respective territories. It accordingly becomes of especial interest and importance to know what these representatives of the shippers think and say with respect to the transportation service furnished to the public by the railroads. Their statements are in accord with the statements of the railroads that transportation service for the past two years has been and now is entirely adequate and efficient—that the record shows that during the period mentioned there has been no car shortage, and demonstrates a standard of transportation service which is unequalled. The following statements have been taken from the minutes of the meetings of these boards.

Atlantic States District

(Composed of the States of New York, New Jersey, Delaware, Maryland, and eastern Pennsylvania.)

At a recent meeting of the Regional Advisory Board at New York City reports were made by the chairmen of the various commodity committees, whose duty it is to report, among other things, on the standard of transportation service which their industries have received. Practically with one acord the chairmen of these committees declared transportation service to be wholly satisfactory.

In the field of automobile accessories and parts the committee chairman declared:

> "The car supply, both on automobile equipment and other equipment, has been adequate and the service rendered by the carriers has been all that could be desired."

The chairman of the Cement committee declared car supply to be "one hundred per cent adequate."

The report of the Coal, Coke and Ore committee states:

> "There is practically nothing to report other than the fact that we are getting ample car distribution for all business that we are able to secure."

The committee on Coffee declared: "The service of the railroad carriers as a whole continues highly commendable and satisfactory."

The Confectionery committee added: "No complaint on present car supply."

The committee on Electrical Machinery said: "The transportation service is almost all that can be desired at present."

The Fertilizer committee said it had "nothing to suggest, because the service, both car supply and movement, has been excellent."

The Lumber committee reported transportation service to be "most satisfactory."

Similar reports came from other committees dealing with Petroleum, Lime, Rubber, Slate and Salt.

Great Lakes District

(Composed of Michigan, northern Ohio, and the Niagara frontier.)

At a recent meeting of the Great Lakes Regional Advisory Board, J. C. Graham, chairman of the Cement committee of that organization, reported as follows:

> "It is the unanimous opinion that the cement mills are now receiving the best service we have ever had during the months of July and August, which is the midst of our busy season. This is the first year we have had absolutely no complaints."

F. J. Larkin, chairman of the Lime and Plaster committee, reported: "The switching and road haul service of all lines is reported as being satisfactory by all shippers."

A. S. Waltz, chairman of the Live Stock committee, reported:

> "With a normal movement of livestock, there have been no complaints on account of car shortage or distribution of proper equipment. As a whole, the transportation service afforded by the carriers in the Great Lakes Region has been somewhat better than has been experienced for several years."

H. J. Bryant, chairman of the Lumber committee, reported: "Transportation conditions are very satisfactory."

Ohio Valley District

(Composed of Kentucky, and parts of Ohio, Indiana, and West Virginia.)

At the fall meeting of this board, recently held at Springfield, Ohio, the board summarized its report as follows:

> "During the past year of unprecedented transportation requirements not a single complaint of any consequence has reached Washington from territory covered by the board, and service has been practically one hundred per cent."

Chairman Edmands, of the Live Stock committee, stated: "The car supply in the regional territory is sufficient to meet our needs."

Chairman Roney, of the Iron and Steel committee, stated: "There are no complaints. General condition of the industry is improving."

Chairman Veth, of the Fertilizer committee, said: "Car supply in the regional territory as a whole is adequate."

Chairman Bieze, of the Building Stone committee, stated:

"Supply of cars for stone loading has been sufficient for our needs."

Southeastern District

(Composed of the States of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi, and part of Louisiana, including the City of New Orleans.)

There was a meeting of the Shippers' Regional Advisory Board for the Southeastern District held at Atlanta, Georgia, September 11, 1924. The same enthusiastic commendation of transportation service is found in the minutes of that meeting.

Practically every commodity committee reported adequate car supply for all the industries represented. This is true of the committees representing cement, coal and coke, cotton seed products, fertilizer, and miscellaneous commodities. The Coal and Coke committee said, for example: "The Coal and Coke committee begs to report a one hundred per cent car supply for the last three months."

The Iron and Steel committee said: "The car supply during the past period was one hundred per cent. There were no complaints as to service or delays in road movement."

Southwestern District

(Composed of Texas, southern Arkansas, southern Oklahoma, part of Louisiana, and part of New Mexico.)

A meeting of the advisory board for the Southwestern district was also recently held. The reports made by the chairmen of the various committees are in complete harmony with those from the Atlantic states, Southeastern, and other districts hereinbefore mentioned.

For example, the chairman of the Cement committee said: "I wish to go on record as congratulating the carriers for the excellent service they have maintained."

The committee on Cotton Seed and Products, in its report, said:

> "Reiterating remarks made at our Dallas meeting in March—the transportation lines are to be commended for the interest they have taken during the past years in giving preference to movement of cotton seed and its products. Both the Interstate and Texas Cotton Seed Crushers' Association are willing to co-operate with them in every way possible and solicit suggestions from them at any time, looking toward improvement in service. What our people want is SERVICE. We don't want CLAIMS."

The report on Local Conditions said, with reference to the box car situation: "I just want to say that the situation in the southwest is probably better than it has ever been."

Transmissouri-Kansas District

(Composed of the States of Missouri, Kansas, northern Oklahoma, and northern Arkansas.)

At a meeting of the advisory board held in this district about the middle of August, there were given the same character of reports as to the excellence of transportation service that have been stated elsewhere. The chairman of that board, who was for a considerable period chairman of the Kansas Public Utilities Commission, in his opening statement said:

> "We usually expected to run into a car shortage about the latter part of July that was more or less acute until the wheat crop had been moved off by the middle of November to the first of December. My information from the public utilities commission today is that there has been substantially no complaint even though this is the second greatest wheat crop that Kansas has ever produced. That is a very fine tribute to the efficiency of the railroads serving Kansas and this southwest territory and I think a great part of that arises from the observance of the car service rules, closer co-operation between shippers, and a general disposition on the part of everybody to increase and contribute toward improvement of the transportation machine."

At a later point in the proceedings the chairman again said: "It may be fairly and accurately said that this represents the best performance that ever has been given in the movement of a big crop out of the winter wheat section."

The chairmen of commodity committees in this district reported adequate car supply and satisfactory service. This is true of the coal, grain, hay, lumber, live stock, oil, and other committees.

Central Western District

(Composed of the States of Nebraska, Colorado, Utah, Wyoming, and part of Idaho.)

Similar praise of transportation service afforded the shippers comes from the far west. The chairman of the Central Western Regional Advisory Board has taken public occasion to commend the railroads for the excellent service which they have afforded. He is chairman of a state public utility commission and also chairman of the National Association of Railway and Public Utility Commissioners, and has for many years been in contact with the railroad situation. There was no occasion for him to make such public statement, except his own desire to give credit where credit is due and to be fair with the carriers with whom he had dealt for so long.

At a meeting of the United States Chamber of Commerce in Cleveland in May, 1924, he said:

> "The year 1923 stands out conspicuously above all years in railroad history. . . . The traffic for 1923 represents the peak for American railroads. And this remarkable traffic movement was achieved without any car shortage, without any congestion, and to the complete satisfaction of all shippers. It was an amazing achievement."

Members of other state commissions likewise commended the railroads for the high order of service which they were rendering to that district.

Midwest District

(Composed of parts of the States of Wisconsin, Iowa, Illinois and Indiana.)

In the great central western region, where there is intensive production, the shippers have spoken in the same manner. At a meeting of a shippers' advisory board, held recently in Chicago, there are found the reports of commodity committees similar to those mentioned above.

At this meeting in Chicago the Automobile committee reported that "Automobile equipment is, of course, plentiful and no complaints of service have reached our committee."

The committee on Brick and Clay Products said: "Evidently the service is all that the industry desires."

The Cement committee reported the car supply plentiful, as did the Corn Products, Dairy Products, Fertilizer, Fresh Fruits and Vegetable committees. The other commodity committees, while not giving a definite statement as to the excellence of transportation service, have practically no complaint to make.

More recently there was a meeting of the shippers' advisory committee in Chicago. The chairman of this advisory committee made a brief statement with reference to transportation achievement and service at the opening of the meeting. He spoke as follows:

> "I should like to make a few remarks as to the general transportation situation since our July meeting.
>
> "At that time business was running considerably less than a year ago. There has been a continuous upturn, however, and the report of weekly loadings of Septem-

ber 27 reached a figure of 1,087,447, about 10,000 cars less than the same week last year, when the figure reached 1,097,493, which was the highest record so far made.

"Despite the rapid increase in the demands made upon our transportation machine, no serious difficulties have been encountered in the movement of the large volume of traffic; as a matter of fact, during the week of September 27 a surplus of 143,345 cars was reported, which surplus is subtantially in excess of that during the same week of 1923.

"At this season of the year, in this region, we are particularly interested in the box car supply for grain movement, and in the refrigerator situation. Let us see how this situation has been handled. Recent figures indicate that the roads in the three western districts had 102.4 per cent ownership of box cars on line, with 61.5 per cent of their system cars at home, and these reports indicate that this is the best location of box car equipment, with respect to both home cars on owning lines and total cars in western districts, that has ever existed so far as the records of the Car Service Division disclose.

"The movement of empty box cars from the east, through the gateways of Chicago and St. Louis alone, has averaged since the fourth of May over 800 western empties per day of western ownership. This relocation has been accomplished without the necessity for any special orders by the Car Service Division, all of which indicates that not only are the railroads co-operating with the shippers, but they are learning to co-operate with each other.

"I am informed that to date all demands for refrigerator cars for the movement of perishable traffic have been met without any shortage of cars up to this time.

"The statement of freight cars awaiting repairs shows a total of 6.9 per cent awaiting heavy repairs, 2.3 per cent awaiting light repairs, total 9.2 per cent. These figures were running around 7.5 to 8 per cent last year.

"The report of the condition of equipment required to move this heavy traffic shows about 15 per cent of the locomotives awaiting heavy repairs as compared with 14.7 last year, and 1.9 per cent awaiting light repairs compared with 1.8 per cent last year. On September 1 there was a surplus of 6,762 serviceable locomotives as against 2,714 on September 1 last year.

"The peak of the grain and refrigerator movement is now being passed, and the matter of coal movement will undoubtedly be of predominant interest from now on. With winter coming on and business on the upturn, the demands for open top equipment are increasing. It is interesting to note, however, that there was a surplus of 72,279 open top cars available according to the report of September 27.

"It seems to me that we can afford to be somewhat enthusiastic in congratulating our railroad friends on the excellent showing they are making."

The reports of the various commodity committees fully corroborated the statement by the chairman of the board. High commendation of the transportation service was given by the chairmen of the committees on Agricultural Implements, Brick and Clay Products, Canned Goods, Groceries and Food Products, Coal, Corn Products, and Grain Products.

The report by the chairman of the Grain Products committee contains the following statement:

"We take this opportunity of expressing to the carriers our appreciation for the excellent service rendered, and assure them of our hearty co-operation in such ways as will bring about a continuance of such good service."

Northwestern District

(Composed of the States of Minnesota, North Dakota, South Dakota, Montana, northern Wisconsin, and the upper Michigan peninsula.)

In the northwest, where the movement of wheat creates a peculiar problem, the same commendation by shippers of the transportation service afforded them can be found. Not only have members of the Board and chairmen of committees reported a high excellence of transportation service for that district, but others also who have been in touch with the situation have said the same thing. For example, Managing Director Meyer, of the War Finance Corporation, reporting October 2, 1924, with respect to the wheat situation in the great northwest, regarding the railroads and their service to the shippers and farmers, said:

"I am glad to say that the reports are most optimistic and that, in fact, railroad transportation seems to be adequate to the task and practically no substantial car shortages are reported. *On the contrary, railroad efficiency in moving the crops is almost without precedent.*"

Pacific Coast District

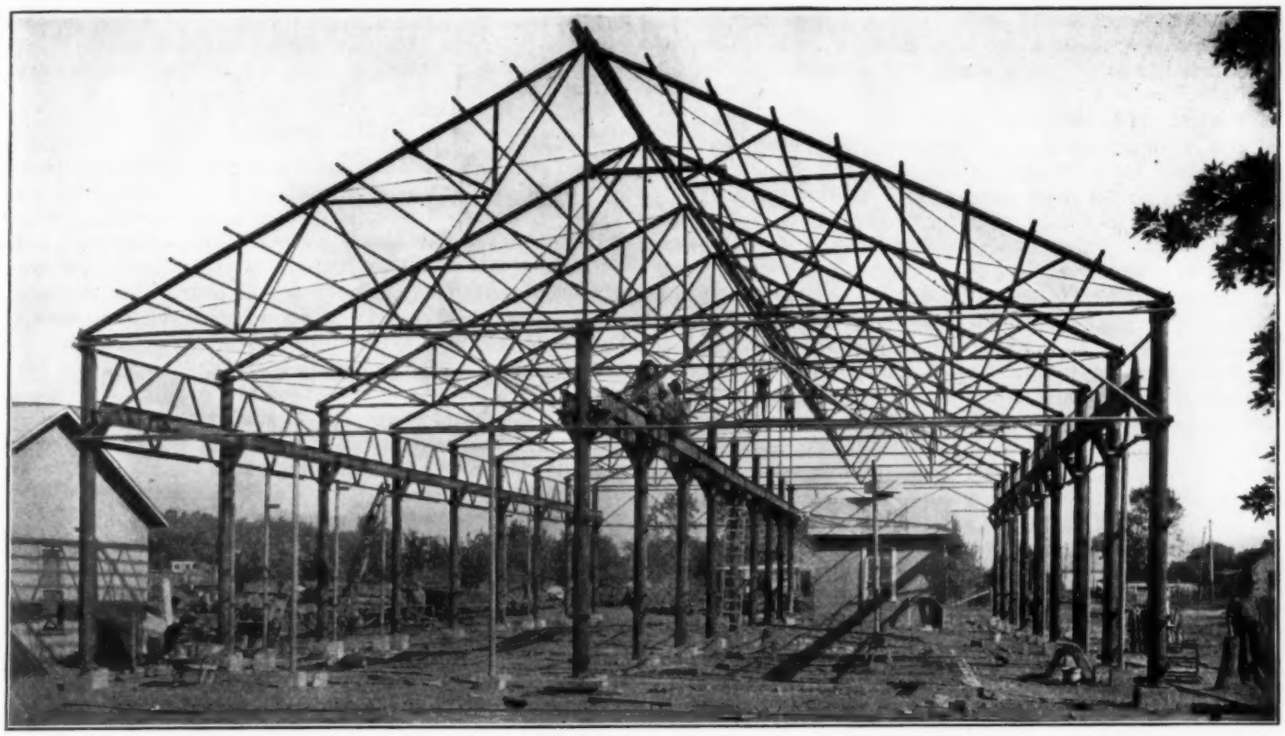
(Composed of the States of Nevada, California, Arizona, and western part of New Mexico.)

Charles E. Virden, general chairman of the Pacific Coast Regional Advisory Board, and one of the leaders of agriculture and industry on the Pacific Coast, complimented the railroads on the adequacy and efficiency of the service this year by saying:

"This is a remarkable fact when it is taken into consideration that the car service last year was only fifty to sixty per cent efficient and that though this year more cars have been shipped than last year, one hundred per cent efficiency has been obtained."

THE SOUTHERN PACIFIC has established through passenger service between Dallas, Tex., and Beaumont, by extending the Texas & New Orleans train now running between Dallas and Jacksonville, to Beaumont. The Texas & New Orleans train will carry a through sleeper to New Orleans, leaving Dallas at 7 p. m. and reaching New Orleans at 4:25 the following afternoon. This company now runs cafe-observation cars between Dallas and San Antonio on the train leaving Dallas at 9 a. m.

Photographs and Exhibits in Transportation Building University of Illinois



A Storehouse Built of Junk Pipe with 8-in. Columns and 2-in. Girts and Purlins

Welding of Fabricated Steel Structures

When It Can Be Used to Supplant Rivets, the Cost of the Structure is Considerably Reduced

BUILDING of steel structures by welding without the use of rivets was the subject under discussion at the annual fall meeting of the American Welding Society held last week at Pittsburgh, Pa. The use of gas, electric arc and resistance welding was considered and data were presented to show what progress had already been made in this new field of fusion welding application.

Electric Arc Welding

A paper entitled "Welding as a Method of Fabricating Large Structures," prepared by H. Goldmark, consulting engineer, W. Spraragen, secretary, American Bureau of Welding, and W. L. Warner, Industrial Engineering Department, General Electric Company, showed the advantages of welding as compared to riveting by listing the operations necessary in both processes. For example, the following steps are necessary in riveting a building or bridge: 1. Design, 2. Making Drawings, 3. Making templets, 4. Marking steel, 5. Punching or drilling holes, 6. Assembling, 7. Riveting, 8. Painting in the shop, 9. Erection, 10. Painting in the field.

The same steps involved in erecting the same bridge or building by welding would be as follows:

1. Design, 2. Making the drawings which are much simpler as there are not any rivets to be shown, 3. Preparing material to be welded. In some instances this requires beveling of plates, in others removal of rust, and in still others no preparation at all. 4. Erection, 5. Painting in the field.

In addition to the saving in the number of steps in the operations the paper also pointed out that welding in construction permitted a saving of 15 to 25 per cent in weight of material used, that accurate alinement is not necessary, that noise of riveting is eliminated and that the finished structure when welded is superior in cases where oil water, oil or gas tightness is required. Specific methods of procedure were presented in two appendices. The following conclusions seemed to the authors worthy of mention:

1. Electric arc welding possesses possibilities of being used as a means of fabricating structural steel parts with resulting economies and superiority of product.

2. Test data and service experience have already shown that welding can be safely used in structural work if proper regard is given to design, methods, inspection, workmen, materials and specifications.

3 If welding is to be specified, a structure should be designed primarily for welding, as in this way only will it be possible to get a good job and effect the maximum economies.

4. While a vast amount of data is already available more will have to be obtained and in particular types of joints, shapes of structural members will have to be developed as a result of welding experience and tests.

5. Structural engineers, steel companies and fabricating companies should get together and co-operate in the preparation of data and specifications which will be of service to the structural engineers and in conducting a comprehensive series of investigations to secure the data and information that are now lacking.

"Uses of Spot Welding in the Structural Field," was the

title of a paper presented by H. A. Woofter, electrical engineer, Thomson Electric Welding Company. Mr. Woofter presented the results of a number of tests of spot welded specimens made at the Lunkenheimer laboratory in Cincinnati which gave convincing evidence of the dependability of spot welding and of butt resistance welding. Among a long list of existing applications of butt welding cited in the paper were the application of spot welding to the building of smokestacks, steel joists for fireproof buildings, ventilators on battleships, iron stairways, steel culverts, metal furniture, automobile parts, etc. The steel joists assembled by spot welding were made of 3 in. x 3 in. x ⅜ in. angle irons held together by 2 in. x ½ in. bars.

Modern types of portable and stationary spot welding machines were described. One of these is a machine with a six-foot throat gap capable of welding two ½-in. plates together in 30 seconds making two 1½-in. welded spots simultaneously. Another special type of machine can be used for welding under water, either fresh or salt.

Mr. Woofter stated that before spot welding could be introduced in the structural field it was necessary to overcome the natuaral reactions to the introduction of the new process, to provide data regarding power requirements and to design machines which would carry the enormous currents necessary and at the same time be able to exert the required welding pressures. He declared that these difficulties were now things of the past, that large savings by the adoption of spot welding have been effected and that insurance companies, national inspection boards and railroad and steamship officials have recognized and approved the spot welding process in many instances.

Gas Welding

A paper entitled "Gas Welded Structures and the Cutting Torch as a Tool in the Structural Field," by G. O. Carter and D. C. McGiehan, Oswald Acetylene Company, was presented by Mr. Carter. He said that the cutting torch was now used by practically all construction gangs; that its application was established and its use being extended. In his opinion, tubular sections provide the best form for the fabrication of buildings if the length of the members is not too great as compared with the diameter, since the tube has the greatest strength per unit weight of all structural forms. It cannot be used with rivets, he said, but is easily applicable to welded construction. He pointed out that this type of construction is used for airplanes.

Bronze welding for general structural work was recommended by Mr. Carter because it provides strength of joint equal to the strength of the member and because bronze welding can be done rapidly at a cost which is only a little more than half of doing the same work with the torch and a steel filler rod. While the bronze is more expensive than steel there is a large saving in gas and labor. Mr. Carter said he did not believe that an attempt should be made to apply welding to structural forms designed for riveting, but that shapes more suitable to welded construction should be used. Getting enough welders for a large construction job at this time would be very difficult. He presented lantern slides showing structures made of welded tubular sections and included with them a picture of a caboose of welded construction built by the "Tailoring" method which eliminates the designing of joints, the plates being cut to fit and welded as the caboose is built.

Loosening of Rivets

"Loosening of Rivets," was the title of a paper presented by R. Kinkead, of the Lincoln Electric Company. In order to obtain information on this subject a study was made of rubber plates fastened together with rubber rivets. The conclusions reached by Mr. Kinkead were that stresses in the plates open up small spaces alongside the rivets sufficiently large to admit atmospheric moisture which in time corrodes the rivets. It was pointed out that welds do not work loose—that if the joint fails it fails without first working loose.

Discussion

Two structural steel engineers took part in the discussion: Lee H. Miller, American Institute of Steel Construction, and J. H. Edwards, American Bridge Company. Mr. Miller outlined the possibilities of welding in the construction field by stating that 3,000,000 tons of structural steel are used per year in the United States and Canada. The dependability of rivets, he said, is known, whereas welding of structural steel is now in experimental stage. At present welding is used for securing columns to bearing plates but for little else. He suggested that a method of providing visible evidence of the soundness of a weld should be developed. Mr. Edwards also stated that in his opinion it would be more difficult to overcome the mental resistance of builders to welding than to solve the problems of structural welding. To support this opinion he cited the case of one builder who will not even permit the use of a cutting torch in building construction. He concluded, however, by endorsing the efforts of the Society and by offering his assistance in the development of the process which would undoubtedly reduce cost of construction.

Mr. Edwards said that the optimism shown by the welders is both necessary and desirable. The welders apparently know almost nothing about structures and the co-operation of structural and welding engineers is essential. He pointed out that material is saved by welding only at joints and in tension members. Structural engineers realize that existing structural shapes are not easily adapted to welding, but present shapes must be used and new shapes will be developed as a demand for them is created. He prophesied that the first applications will be made in structures for which there is a large duplication of operations which can be performed in the shop with the aid of jigs.

Professor H. L. Whittemore, United States Bureau of Standards, likened welded structures to concrete structures in that the finished work is practically all one piece. He said the welding shop could not be expected to work out means of welding by the "cut-and-try" method and that industrial research is necessary if the economies which can be effected by welding are to be realized.

Other members discussed the subject at great length and in conclusion this discussion was summed up by the president, E. H. Ewertz in substance as follows: Welding will find a place in the structural field because of inherent economies and advantages. The welders as a group know almost nothing about structural engineering and must be assisted by engineers in the structural field. Small structures can now successfully be built by welding. Welding must be applied to existing structural shapes until demand is created for other forms more suitable. The American Welding Society is not ready to tell how structural welding should be done, but is in the position of a student, endeavoring to determine the best methods of procedure.

On November 1, at the end of the first year of the operation of the Detroit, Toledo & Ironton's investment certificate plan, nearly 56 per cent of the employees held savings certificates valued at $239,395. Of the 2,654 employees on the road, 1,482 are depositors, averaging more than $161 each. The steady growth of the D. T. & I. savings plan is evident by the monthly records. At the end of the first month 147 employees had deposited a total of $6,233. At the end of the third month 585 employees had invested $55,406, which was increased at the end of the sixth month to $100,891 deposited by 1,134 employees.

How Automobiles Should Be Loaded in the Car*

Proper Blocking and Bracing in Cars, with Good Decking and Lining, Essential—Methods Illustrated

By P. Alquist

Master Car Builder, Delaware, Lackawanna & Western, Scranton, Pa.

IN A PAPER OF THIS KIND, it is difficult to give complete details of automobile loading for the reason that various methods are employed at the different automobile plants. Fig. 1 illustrates the metal block now being used by some of the automobile companies and shows the double headed nail which is being advocated for use by all shippers for any class of lading which requires nailing to the floor of the

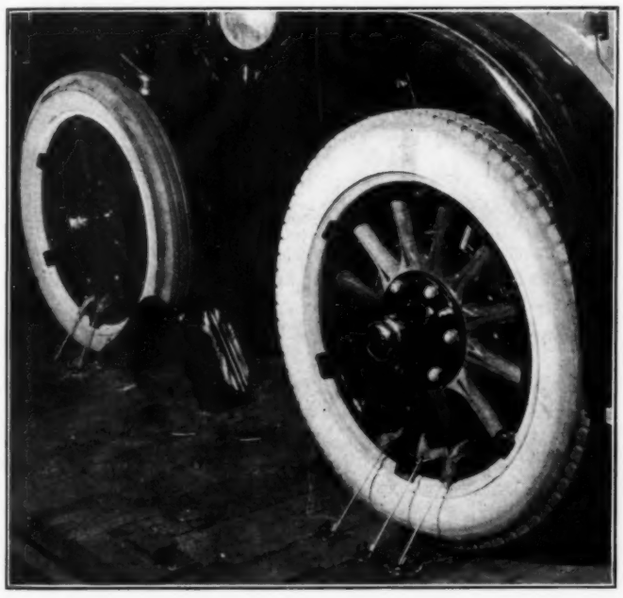


Fig. 1—Improved Method of Securing Wheels So They Will Not Move

car. The benefit derived from the use of these nails is that they can be removed without damage to the car. Before these were used the common nail was driven into the floor so that it was necessary to take a pick axe in order to remove them. This resulted in considerable damage to the decking.

A double decked load of automobiles in one end of a double sheathed automobile car is shown in Fig. 2. Particular attention is directed to the fact that the tops have been removed from these cars, and to the wood bracing which is placed in the most approved manner, the main object being to prevent shifting. This also illustrates why cars having inside lining should be in good condition. The automobile that is on the top tier is the same size as the one on the floor and proper blocking must be depended upon to secure an even footing. This illustration also clearly indicates why cars which have been loaded with cement, lime, fertilizer, etc., cannot be used, as no covering is placed around the automobiles. When using a single sheathed automobile car additional bracing has to be applied to the sides of the car which is not necessary in a double sheathed car.

The common method of loading automobiles on flat cars is shown in Fig. 3. The two large wooden frames shown in the illustration are not left on the car but are used to hoist the cars in the top tier, which are then placed on the metal combination bracket and bracing. Automobiles loaded on a flat car depend entirely on the security of the decking for support. Therefore, a flat car with loose decking is not fit to be loaded with this commodity. The theory of loading automobiles properly in house cars is to block them so they cannot shift, that is, to have the blocking absolutely rigid. This is also true of flat cars as in the event the loading is not properly secured it will be quite impossible to take them to their destination without damage.

Fig. 4 illustrates how one automobile is loaded when only five automobiles can be loaded in one car, two being placed on the floor, two above them and one at the end. Automobiles are loaded in gondola cars in the same manner as when loaded in automobile cars. The side view of automobiles loaded in a gondola where one of the automobiles is loaded

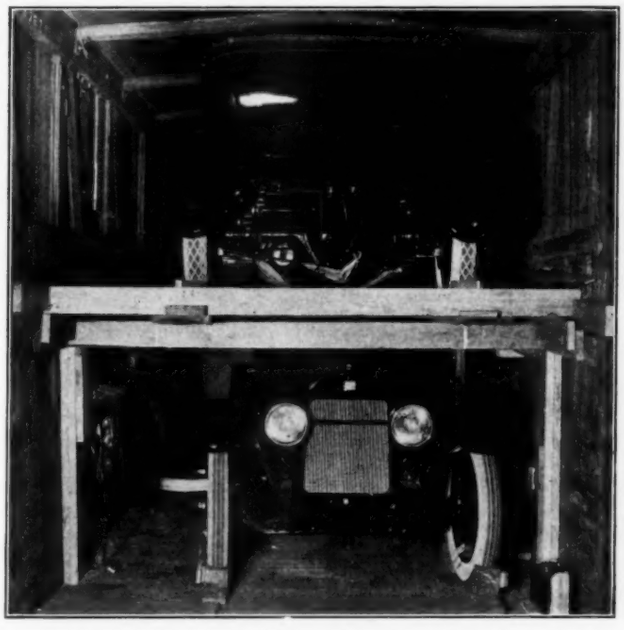


Fig. 2—Method of Bracing a Double Deck Load of Automobiles in a Double Sheathed House Car

above the other is shown in Fig. 5. One end of the car is above the other car and one is on the floor.

How Longitudinal Plank Can Be Used in Automobile Cars

The question has been brought up relative to the idea of placing longitudinal plank throughout the length of automobile cars. The thought is that this would be beneficial in cases where the blocking is spiked to the deck as it would avoid the destruction of decking when using ordinary nails. It has not been found possible, however, to do this. As a general rule automobile concerns do not run cars into the

*Abstract of paper presented at the twenty-third annual convention of the Chief Interchange Car Inspectors' and Car Foremen's Association, held at Chicago, September 23, 24 and 25.

car on their own tires but instead use the truck illustrated in Fig. 6. For this reason they find that the longitudinal plank would be objectionable. It has been suggested, however, that this feature might be avoided and the longitudinal planks used if bolted to the floor and properly spaced to take care of blocking when loading the machines. These planks

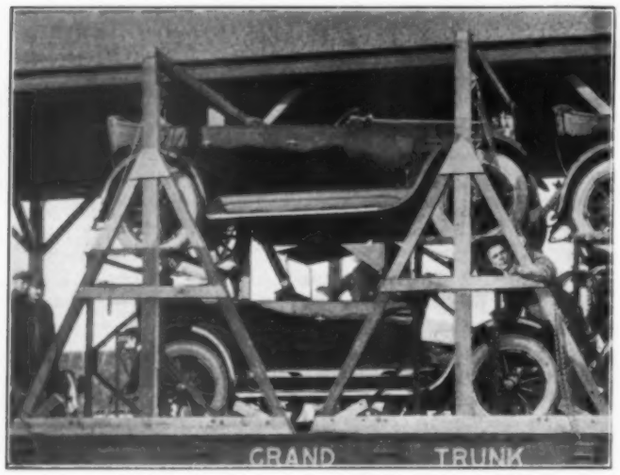


Fig. 3—Common Method of Loading Automobiles on Flat Cars

should be placed flush with the decking and arranged so that it would be easy to renew them when they were damaged to such an extent that repairs were necessary. This would result in less expense in maintaining automobile cars as it would only be necessary to renew the planking and not the entire decking.

Automobiles for export are prepared at the plant in suitable

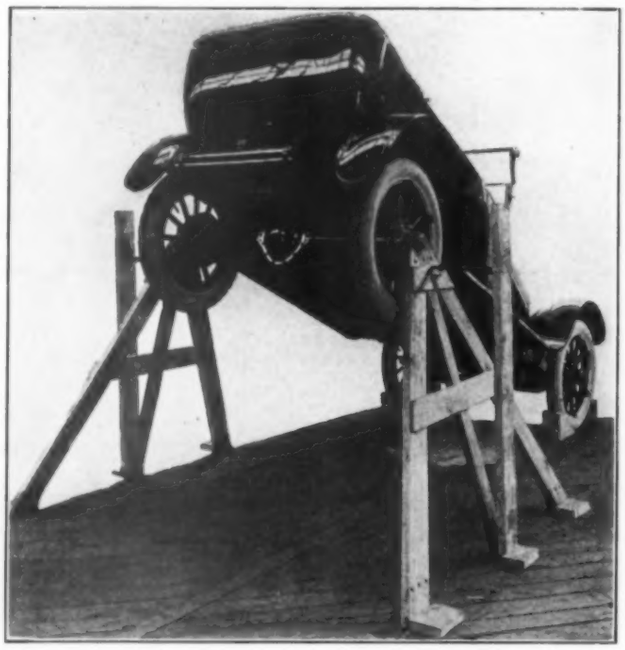


Fig. 4—How the Automobile at One End of the Car is Loaded when Five Machines Are Loaded in One Car

cases for shipment on boats. These cases are prepared with much care and are designed to take up the smallest possible space. The interior is covered with a water proof material to protect them from the weather when shipped on flat cars. When loaded they are packed in these cases and are braced according to the A. R. A. loading rules for this class of loading. Ordinary shifting, it has been found, does not damage the lading, but when found shifted the cases should be replaced to their original position on the car and the

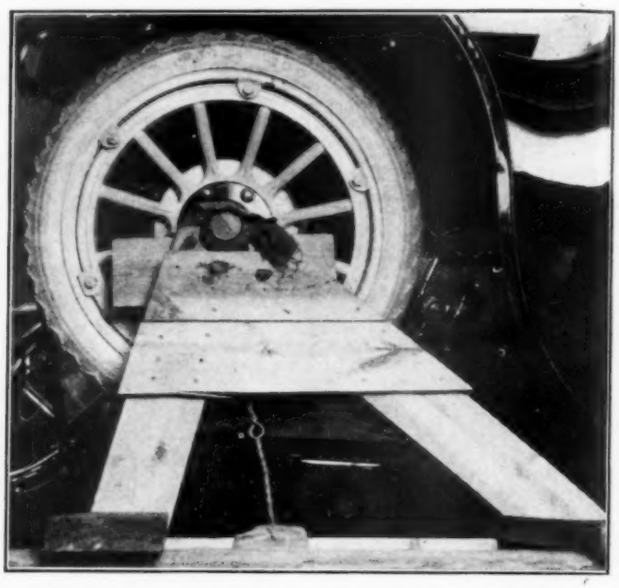


Fig. 5—Side View of Automobiles Loaded in a Gondola Car Where One of the Machines Is Loaded Above the Other

blocking secured. Great care should be exercised not to drive nails through the boxes.

Decking in all automobile cars should be secure before it is possible properly to load and block automobiles. Boxes must be securely fastened to the floor to keep the contents from shifting both lengthwise and sidewise. The metal wire clip which is placed around one spoke of the wheel will keep the automobiles from running up and climbing over the

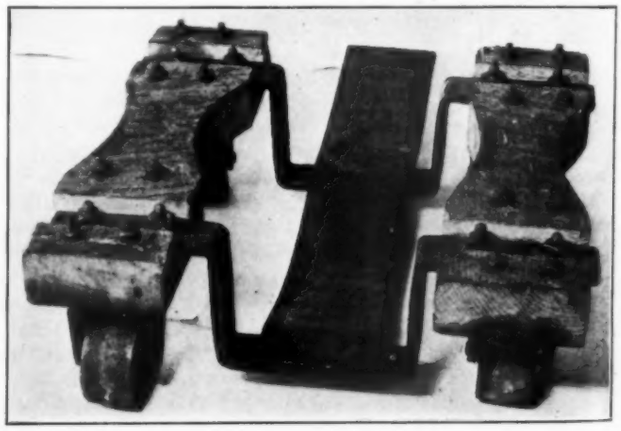


Fig. 6—Dolly or Truck Used to Move Automobiles Into the Car

wheel blocking. This also depends upon a well secured floor.

Whenever a car loaded with automobiles is derailed the lading should be carefully examined. If this is done and the bracing put in the proper position it will save the carriers money and claims. When blocking is found shifted it should be the practice for all roads to place it back in its original position which is clearly shown by the marks left on the interior of the car. In replacing this blocking it should be replaced in kind. If a brace cut in a certain way

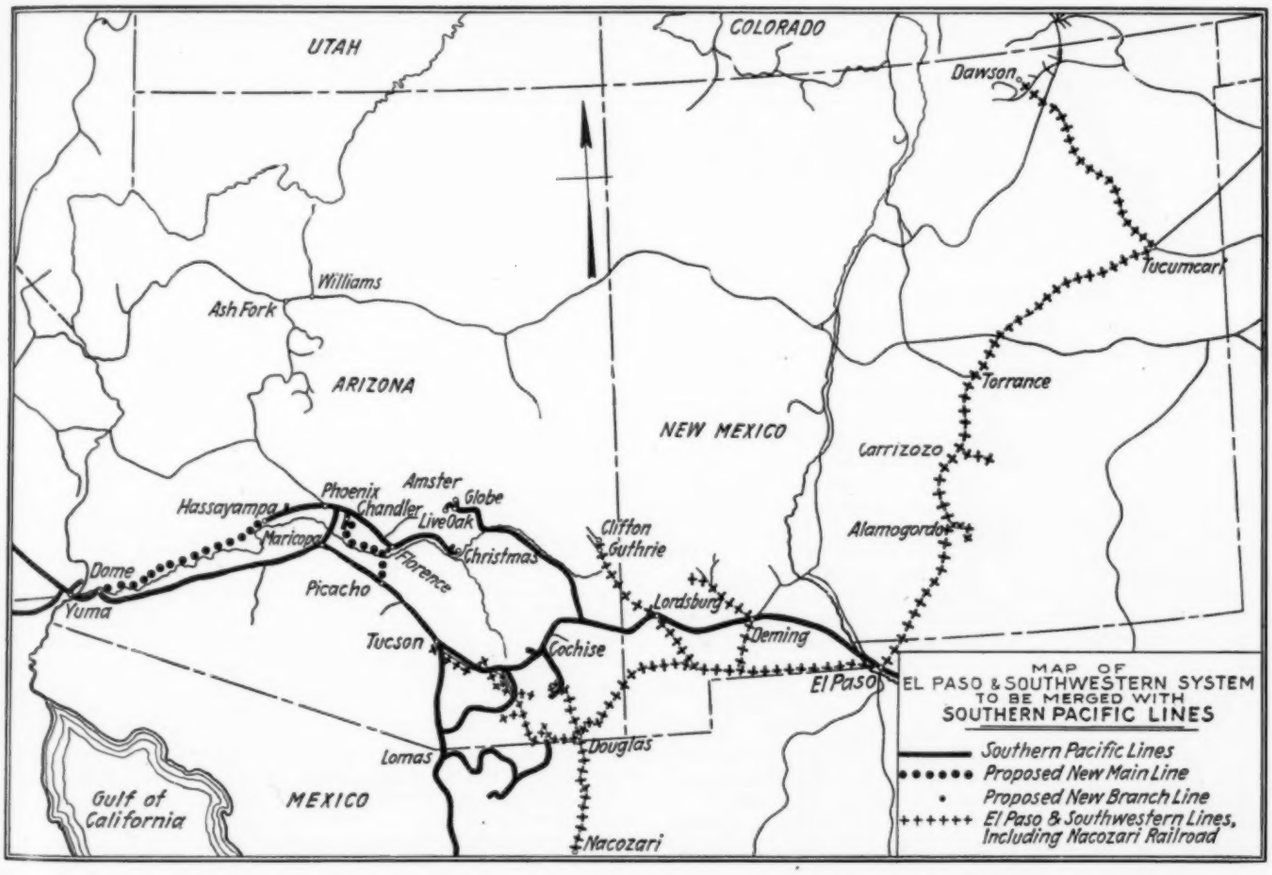
has been broken a new brace cut in exactly the same way should be applied. This is equally true of blocking. If these items are not replaced in kind there is a splendid opportunity for the load to shift and damage the lading.

In conclusion, the proper inspection of automobile blocking throughout the movement of the shipment should be made with the idea that when found loose the necessary repairs may be made. The blocking should not be forced when loose in order to replace it but instead should be placed tight and secured. If the blocking is forced the lading is liable to be damaged. When the automobiles are loaded blocking is designed to allow for some play. When the blocks are placed to hold the wheels the tires are inflated. If the air leaks out of the tires while in transit they should be inflated rather than the blocking reset.

After analyzing the different features in connection with the loading of automobiles it will be noted that the necessity of a good car with good decking and lining is very important. If other than first class cars are used, the roads will be subject to claims for damaged automobiles. We should, insofar as possible, exert every effort in having our inspection forces carefully inspect all cars to be furnished for this commodity. A careful inspection, using cars with good decking and lining and proper blocking and bracing will do more than anything else to cut down the claims on automobiles damaged in transit.

BUFFALO MEAT has been featured on the menu cards of the Northern Pacific during the past few days. The meat comes from the Montana National Bison Range which was established near Ravalli, Mont., on October 17, 1909.

THE PERE MARQUETTE opened its new yards between Toledo, Mich., and Erie on October 30. These yards have a storage capacity of 5,000 cars, and are expected to eliminate congestion at Toledo during the winter months when traffic is heaviest.



Map Showing Lines Which Southern Pacific will Build in Connection with El Paso & Southwestern Acquisition

New lines proposed are from Chandler, Ariz., to Picacho, 50 miles, with a branch to Florence, 7 miles, and from Hassayampa to Dome, 115 miles. In addition to the construction of 165 miles of new main line and 7 miles of branch line, road will be improved from Chandler through Phoenix to Hassayampa, 63 miles. The estimated cost is $12,752,000 for new construction; $1,386,000 for improving existing line, a total of $14,138,000. Work is to be completed before December 31, 1926.

The construction of the new mileage will put Phoenix on a through Southern Pacific main line, and will supply additional transportation facilities for Phoenix and territory nearby, notably the growing agricultural districts of the Salt River valley. Branch to Florence will shorten distance from Magma and the Ray-Hayden mining district to eastern points.

In connection with the acquisition of the El Paso & Southwestern, the construction of the new mileage will give the Southern Pacific a double-track main-line or rather two main lines between Yuma, Ariz., and El Paso, Tex., except between Picacho and Tucson, 40 miles, and between Wendon and Dome, 15 miles.

Traffic between Tucson and El Paso has reached such proportions as to have made double-tracking of line an urgent necessity in the near future. Use of El Paso & Southwestern rails as additional main-line is expected to obviate necessity for such double-tracking, and thereby result in total saving of $3,430,950 annually, divided $662,000 resulting from better balancing of traffic; $1,487,860 saving in administration and operating expenses under unified operations, and $1,954,100 in capital and maintenance charges through avoidance of double-tracking.

See article "Hearing on Southern Pacific, E. P. & S. W. Merger," *Railway Age* of September 13, 1924, page 457, and article "Control of E. P. & S. W., by S. P., Authorized," *Railway Age* of October 4, page 611.

General News Department

The Signal Section of the American Railway Association is to hold its annual meeting at Hotel Drake, Chicago, on Thursday and Friday, March 12 and 13, 1925.

The Central Railway Club will hold its next meeting at Hotel Statler, Buffalo, N. Y., on Thursday evening, November 13, with an address by Roy V. Wright, managing editor of the *Railway Age*, on What a Railway Club Means to Its Members.

Fuel Consumption on the M-K-T—a Correction

In the item on fuel consumption published in the *Railway Age* of October 25, page 763, the record was credited in error to the Missouri Pacific, whereas it belonged to the Missouri-Kansas-Texas.

Correction

In the reference to the National Railway Appliances Association, which appeared in the Meetings and Conventions column of the *Railway Age* of November 1, 1924, page 815, it was indicated that the office of C. W. Kelly, secretary-treasurer, was in the Peoples Gas building, Chicago. This is incorrect, as Mr. Kelly has moved his office to the Seeberger building, 825 South Michigan avenue, Chicago. The exhibit will be held on March 9-12, inclusive, 1925.

Extraordinary Safety Record

A certain railroad superintendent in England who manages a division employing 5,000 persons reports that in a period of three years and six months no employee has been killed; and during the same time only one has been seriously injured; and, according to the Railway Gazette (London), he attributes this good record mainly to the careful supervision which was begun in October, 1911, after a conference of officers in which the general manager, speaking to his subordinates, and referring to a record of 12 employees killed said, "I should like you to know at exactly whose door I lay these deaths: At yours, gentlemen."

From that meeting the subordinate officers went out with the clear understanding that it was their duty to see that every man who unnecessarily risked his life should be called to account. "Have every such man," said the general manager to the superintendents, "brought before *you*" (not merely cautioned by a foreman).

Crow's Nest Rate Fight Not Ended

The decision of the Canadian Board of Railway Commissioners of a few days ago setting aside the Crow's Nest Pass freight rates on westbound commodities continues to be the chief subject of discussion in railway, political and governmental circles in Canada. A petition was filed early last week with the federal Cabinet by H. J. Symington, of Winnipeg, for the three prairie provinces asking that the Railway Board's order be suspended until an appeal could be made to the Cabinet. Following the receipt of a telegram from Premier King, who has been touring Western Canada, suggesting that the request of the west be given prompt consideration by the Cabinet a meeting of the latter body was held last week, presided over by Hon. George P. Graham, Acting Prime Minister and Minister of Railways and Canals. Following that meeting it was announced that there would be no suspension of the Railway Board's order. It was decided at the Cabinet meeting that it would be inadvisable to do anything to dislocate the present situation until a full meeting of the Cabinet was possible on the return of Premier King and six of his colleagues who have been on a speaking tour in the west.

It is inevitable that the whole freight rates question will be fully and warmly discussed at the next session of the Canadian Parliament which will open about January 15. The probable course of the present fight of the west against the Railway Board's finding is that the case will go to the Supreme Court of Canada for argument at the end of the present fall term, and that, in the light of its finding, Parliament next session will be seized of the question. If the court upholds the Railway Commission's assertion that the act that created it automatically superseded all special rate agreements, only Parliament can consider any modification of that power. If, on the contrary, the commission is held to be wrong, then consideration must be given to the question whether —the Crow's Nest schedule being sustained—all rates should be brought down to a uniform level with it, thus abolishing the discriminations complained of in the three months that the scale was operative.

The Prairie Provinces may expect little support in Parliament from the east, or from British Columbia, which want lower rates, if possible, but on the basis of a uniform structure throughout the country.

Result of Letter Ballot on Standard Box Cars

The American Railway Association has issued Circular No. DV-376 giving the results of the second letter ballot on standard box cars. The board of directors has approved propositions five, seven and eight containing the recommendations of the Mechanical Division as to the standard single-sheathed box car and the types W and Y trucks, including bolsters, side frames and other details. In the case of proposition six, relating to the standard double-sheathed steel box car, in order to obtain interchangeability of roofs and the maximum of standardization with details already incorporated in the single-sheathed car, it was the opinion of a majority of the General Committee of the Mechanical Division, that this car should be designed to an inside width of 8 ft. 9⅛ in. The General Committee, however, was unable to agree upon a unanimous recommendation for the inside dimensions of this car. Proposition six will be given further consideration by the Committee on Car Construction and the General Committee and a further ballot considered at a later date.

Disastrous Crossing Accident in Chicago

Fourteen persons were killed and many more injured in Chicago on the morning of Sunday, November 2, about 2 o'clock, when a draft of freight cars on the Chicago, Milwaukee & St. Paul crashed into a street car at the North avenue crossing. The draft which contained 48 cars had been cut in two while standing at the crossing to permit street traffic to pass through and the accident occurred when the cars on the north side were being moved back across the street to be coupled to the others. The conductor of the street car, who had gone ahead to flag the car across the crossing failed to see the approach of the freight cars and signalled to the motorman to proceed. Switchmen on the freight cars were unable to relay the stop signal to the engineman at the far end of the draft in time to prevent the collision. Gates at the crossing had been lowered when the freight was first blocking the crossing but were not lowered again when the cars were about to be recoupled. Some of the witnesses at the inquest testified that the man in the tower who controlled the gates had apparently been drinking.

Thornton Advocates General Overhauling of Canadian Rate Structure

Hope that the Dominion Railway Board would institute a thorough investigation of the entire freight rate problem, taking the whole rate schedule into consideration, was expressed by Sir Henry Thornton, president of the Canadian National, at a luncheon tendered him by the Chamber of Commerce of Brantford, Ontario, last week in the course of his business tour of Ontario. Referring to the Crow's Nest Pass problem Sir Henry advised

those who were not satisfied with the Railway Board's finding to take the matter through the constitutional channels to the Supreme Court and keep it out of politics.

For the future Sir Henry predicted a natural divide in the west which would result in some traffic turning to the west through Vancouver, while the remainder would come east to the head of the Lakes. Eventually north and south traffic would come, for the United States, he argued, was rapidly approaching the point where it would need its actual sustenance from Canada. It would naturally follow that there would be more north and south traffic.

A feature of the luncheon was the presentation to Sir Henry by the Chamber of Commerce of a silver telephone, a souvenir from "the Telephone City," the birthplace of Alexander Graham Bell.

Wage Statistics for August

The Interstate Commerce Commission's summary of reports of employees, service and compensation filed by Class I railroads for the month of August, 1924, shows a decrease of 184,533 or 9.4 per cent in the number of employees, as compared with the number reported for the same month last year, and an increase of 15,858, or 0.9 per cent over the number reported for the preceding month. The total compensation for August, 1924, was 11.4 per cent less than in August, 1923, and 1.3 per cent greater than in July, 1924.

The monthly earnings, by groups, were as follows:

	Monthly earnings of—			
	Employees reported on daily basis		Employees reported on hourly basis	
Group	August, 1924	August, 1923	August, 1924	August, 1923
Executives, officials and staff assistants	$437	$428	...	...
Professional, clerical and general	182	179	$125	$125
Maintenance of way and structures	240	239	90	95
Maintenance of equipment and stores	248	245	121	130
Transportation (other than train, engine and yard)	98	98	125	124
Transportation (yardmasters, switch tenders and hostlers)	266	260	153	149
Transportation (train and engine service)	...	...	194	193

Increases or decreases in the number of employees, by groups, August, 1924, compared with previous month, and with August, 1923, follows:

	August, 1924, compared with—	
Group	July, 1924	August, 1923
Executives, officials and staff assistants	25	(d) 182
Professional, clerical and general	110	(d) 10,072
Maintenance of way and structures	7,089	(d) 42,268
Maintenance of equipment and stores	4,065	(d) 84,682
Transportation (other than train, engine and yard)	(d) 178	(d) 11,388
Transportation (yardmasters, switch tenders and hostlers)	(d) 21	(d) 2,409
Transportation (train and engine service)	4,768	(d) 33,532
Net increase or decrease	15,858	(d) 184,533

The double column table compares the variations in rates of wages and the relative importance of overtime for the three territorial districts:

	Average straight time hourly earnings				Per cent overtime, of total compensation			
Group and period	Eastern District	Southern District	Western District	United States	Eastern District	Southern District	Western District	United States
Maintenance of way and structures:								
Last six months 1921	$0.464	$0.386	$0.432	$0.425	3.71	2.07	2.79	3.03
Year 1922	.453	.353	.414	.416	7.16	3.52	3.81	5.07
Year 1923	.468	.357	.416	.422	11.16	5.84	5.59	7.86
First eight months 1924	.477	.364	.421	.428	7.01	4.46	4.08	5.27
Maintenance of equipment and stores:								
Last six months 1921	.632	.587	.611	.616	3.60	5.41	4.63	4.31
Year 1922	.608	.544	.575	.584	10.90	12.25	12.56	11.76
Year 1923	.610	.528	.554	.574	7.40	7.92	7.12	7.39
First eight months 1924	.623	.537	.565	.585	3.06	5.72	4.48	4.05
Train and engine service:								
Last six months 1921	.724	.734	.744	.733	12.07	12.61	11.93	12.11
Year 1922	.729	.734	.746	.736	15.50	16.17	13.76	14.98
Year 1923	.730	.733	.745	.736	16.70	16.04	13.95	15.64
First eight months 1924	.758	.759	.760	.759	13.12	13.49	12.13	12.84

Revenues and Expenses for September

A net railway operating income of $116,718,000 was reported by the Class I roads for September, which was the largest net for any month since July, 1918, when the roads earned $138,000,000; but the total is still considerably below the amount necessary for a 5¾ per cent annual return. This compares with $92,426,800 for September last year and $58,000,000, $87,000,000, and $79,000,000 for the corresponding months of 1922, 1921 and 1920 respectively. For August, 1924, the net was $95,415,300. The highest net in dollars for any previous month of the post-war period was shown in October, 1921, when it was $105,520,776. For the first nine months of this year the net railway operating income was $677,927,800, which was at the annual rate of return of 4.21 per cent on the property investment, as compared with $723,142,350, or 4.62 per cent, for the corresponding period of last year.

Operating revenues in September amounted to $540,741,000, a decrease of $5,225,000 or 1 per cent as compared with the same month last year. Operating expenses totaled $381,573,750, a decrease of $35,052,400 or 8.4 per cent under those for September, 1923.

The net earnings by districts for the first nine months with the percentage of return on property investment on an annual basis was as follows:

New England Region	$24,883,499	3.47 per cent
Great Lakes Region	133,393,614	4.84 per cent
Central Eastern Region	143,021,888	4.22 per cent
Pocahontas Region	34,867,218	5.34 per cent
Total Eastern District	336,166,219	4.48 per cent
Total Southern District	101,362,477	5.31 per cent
Northwestern Region	60,827,597	2.70 per cent
Central Western Region	121,411,240	4.00 per cent
Southwestern Region	58.160,309	4.11 per cent
Total Western District	240.399,146	3.59 per cent
United States	677,927,842	4.21 per cent

Eight Class I carriers operated at a loss in September, of which four were in the Eastern District and four in the Western District. In August, 13 roads had operating deficits.

The decrease in operating expenses included a reduction of $23,919,000 or nearly 12 per cent in maintenance expenses for the month of September as compared with the same month last year. For the nine months period there was a decrease of $166,027,350 or nearly 10 per cent. Expenditures in September for maintenance of way alone showed a reduction of $3,866,680 or 5 per cent as compared with the same month in 1923, while the reduction in expenditures for maintenance of equipment in September this year compared with the same month last year amounted to $20,052,300 or 16 per cent.

Out of each dollar of operating revenues received by the railroads in September, 70.56 cents went for expenses. This was the lowest operating ratio for any single month since July, 1918. The operating ratio for September last year was 76.31.

Carriers in the Eastern district had a net operating income in September of $50,680,300, compared with $37,606,176 in September last year. Freight traffic in the eastern district in September, according to incomplete returns, was nearly 6 per cent under that of the corresponding period last year. Operating revenues of the Eastern carriers totaled $256,947,200, a decrease of 4.1 per cent. Operating expenses totaled $187,985,900, a decrease of 11.8 per cent. Class I carriers in the Eastern district earned during the first nine months this year a net of $336,166,200 compared with $381,494,450 during the corresponding period last year.

Class I carriers in the Southern district in September had a net operating income of $13,393,500, as compared with $9,471,950 in September last year. Freight traffic on the Southern roads in September was about 4 per cent under that of the same month last year. Operating revenues of the Southern carriers in September totaled $65,119,190, an increase of one-half of one per cent, while operating expenses totaled $47,502,580, a decrease of 8.4 per cent. The net operating income for the Class I roads in the Southern District for the first nine months this year was $101,362,470, as compared with $96,049,770 during the same period last year.

Carriers in the Western district had a net operating income in

September of $52,644,300 compared with $45,348,690 for the same month last year. Freight traffic in the Western district showed an increase of approximately 3 per cent over that of September, 1923. Operating revenues of the Western carriers totaled $218,674,800, an increase of 2.5 per cent, while operating expenses totaled $146,085,260, a decrease of 3.6 per cent. Class I carriers in the Western district during the first nine months this year had a net operating income of $240,399,150, as compared with $245,598,150 during the same period one year ago.

Operating Results on Canadian Roads, 8 Months, 1924

Freight traffic on the Canadian railways during August was 17.3 per cent lighter than in August last year, and passenger traffic was also lighter by 18.7 per cent. Revenues, as a result, fell off, being $5,572,166 or 13.8 per cent less and operating expenses were cut $4,462,657 or 12.9 per cent, reducing the net operating revenues by $1,109,508, and increasing the operating ratio from 85.5 per cent to 86.38 per cent. This is the lowest operating ratio this year, but net revenues should improve with September, October and November operations.

Freight revenues on the Canadian National showed a decrease in August of $2,236,572 or 19.2 per cent, for a decrease of 12.6 per cent in freight traffic. There was a decrease of $296,681 or 7 per cent in passenger receipts for a decrease of 20 per cent in passenger traffic, and gross revenues were lighter by $2,706,612, or 14.7 per cent. Operating expenses were reduced $756,359 or 17.2 per cent in maintenance of way and structures; $76,167, or 2.2 per cent in maintenance of equipment; $940,487 or 11.5 per cent in transportation expenses; and $1,795,337 or 10.4 per cent in the total.

A summary of operating results for the eight months ending August 31 last follows:

	1924	1923
All Railways		
Operating revenues	$282,346,072.84	$285,500,991.08
Operating expenses	257,341,682.10	262,191,416.53
Net operating revenues	25,004,390.74	23,309,574.55
Operating income	21,449,786.98	21,457,756.43
Canadian National		
Operating revenues—		
Canadian lines	$130,144,389.73	$132,644,809.87
United States lines	23,028,776.27	25,846,901.71
Total	$153,173,166.00	$158,491,711.58
Operating expenses—		
Canadian lines	$129,577,738.21	$133,627,805.44
United States lines	19,667,063.64	19,783,668.78
Total	$149,244,801.85	$153,411,474.22
Net operating revenues—		
Canadian lines	$566,651.52	Dr. $982,995.57
United States lines	3,361,712.63	6,063,232.93
Total	$3,928,364.15	$5,080,237.36
Operating income—		
Canadian lines	$961,424.27	Dr. $157,820.03
United States lines	Dr. 641,783.20	1,133,421.94
Total	$319.641.07	$975,601.91
Canadian Pacific		
Operating revenues	$112,585,134.04	$110,561,664.41
Operating expenses	97,395,751.33	97,658,025.06
Net operating revenues	15,189,382.71	12,903,639.35
Operating income	15,898,236.95	14,753,452.88

For the month of September there was a decrease of 10.8 per cent or $2,334,897 in the gross earnings of the Canadian National as compared with the same month last year. Operating expenses, however, also showed a decrease of $2,632,396 or 13.3 per cent, leaving an increase in net earnings of $297,999. For the nine months ending September 30 the aggregate gross earnings show a drop of $7,652,943 or 4.3 per cent; operating expenses were reduced $6,799,068 or 3.9 per cent; and net earnings were $6,075,820 or a decrease of $853,875, as compared with the same period last year.

The Canadian Pacific's operating results for September and for the nine months ending September 30 are as follows:

	Sept., 1924	1923	Decrease
Gross earnings	$15,493,983	$17,745,908	$2,251,925
Operating expenses	10,946,338	13,247,937	2,301,599
Net profits	4,547,645	4,497,971	*49,764
	9 Mos., 1924	1923	Decrease
Gross earnings	$129,358,698	$130,686,362	$1,327,663
Operating expenses	108,912,816	111,434,938	2,522,121
Net profits	20,445,882	19,251,424	*1,194,458

*Increase.

Commission and Court News

Interstate Commerce Commission

The Commission has reopened its proceeding in the matter of the construction of the word "deficit" as used in paragraph 204 of the transportation act relating to the reimbursement of short lines reliquished from federal control.

The Interstate Commerce Commission has issued a report on the rates, regulations and practices of the Peoria & Pekin Union at Peoria, Ill., and nearby points in which it finds that the road is an independent common carrier entitled to assess charges for transportation services performed and that its switching charges, rates and practices are unjustly discriminatory and unduly prejudicial to some extent. General principles are stated for removing the discrimination and the carriers using the terminal are expected to arrange promptly for the solution of difficulties between them along the lines indicated, without an order.

The commission, on further hearing on the complaint of the Inland Waterways, Mississippi-Warrior Service, has issued an order prescribing divisions of joint rail-barge-rail rates on sugar from points in Louisiana to northern destinations and finding that the establishment of additional through routes and joint rates is desirable in the public interest. Rates and a basis of divisions are prescribed.

Court News

Duty as to Resting and Feeding Cattle

The Oklahoma Supreme Court holds that the carrier is not required absolutely to unload, rest, feed and water live stock in intrastate shipment; its negligence in failing to do so is for the jury.—Payne v. Parsons (Okla.) 223 Pac. 618.

Bridge Crew's Cook Not Employee of Railroad

The Minnesota Supreme Court holds that a cook hired by a bridge crew is not a railroad employee and is not entitled to sue under the state Employers' Liability Act.—Edelbrock v. Minneapolis, St. P. & S. M. (Minn.) 196 N. W. 807.

Mail Clerk Loading Mail an Invitee, Not a Passenger

The Massachusetts Supreme Court holds that a mail clerk whose duty it was to load cars, but not to ride in them, was not a passenger, but, while in the course of his duties, an invitee, and not a mere licensee.—Ward v. N. Y. C. (Mass.) 142 N. E. 751.

Assumption of Risk—Defective Water Crane

The Court of Appeals of Kentucky holds that a fireman assumed the risk of operating a defective water crane where he had full knowledge of the defect, made no complaint, and no promise was made to him as to its repair.—Davis v. Briggs (Ky.) 258 S. W. 663.

Assumption of Risk by Section Hand

The Indiana Appellate Court holds that a section hand, engaged in moving a temporary track in a sand pit, made of old rails and partially decayed ties, assumed the risk of stepping on a defective tie insecurely fastened to a rail.—Davis v. Hostetter (Ind. App.) 142 N. E. 723.

Raising of Safety Gates an Invitation to Cross

The Pennsylvania Supreme Court holds that while the opening of safety gates as an automobilist approached a crossing and stopped implied an invitation to cross, the traveler was not thereby relieved from the duty of taking reasonable precautions for his safety. The raising of the gates was for consideration of the jury in deciding whether he exercised proper care.—Johnson v. Director General (Pa.) 123 Atl. 484.

Open Gates No Excuse for Neglecting Precautions at Crossing

The Pennsylvania Supreme Court holds that open gates without more will not be sufficient to excuse a failure to observe the precautions the law requires on the part of one desiring to cross a railroad.—Zotter v. L. V. (Pa.) 124 Atl. 284.

Not Liable for Injury to Passenger Caused by Third Person

The Pennsylvania Supreme Court holds that a railroad was not liable for injury to a passenger thrown under an incoming train by collision with a boy who attempted to board the train before it stopped.—Spagnol v. Pennsylvania (Pa.) 123 Atl. 781.

Proof of Establishment of Crossing by Prescription

The New Jersey Court of Errors and Appeals holds that the use necessary to establish a public railroad crossing is that of members of the general public. Proof of use by employees of owners of property to which it gives access or of one only of the public is not sufficient.—Olsen v. Erie (N. J.) 124 Atl. 367.

Railroad's Duty as to Care in Third Person's Yards

The Massachusetts Supreme Court holds that a railroad operating its cars in a coal yard under contract with the owner owes the employee of a building contractor constructing a building for such owner, who crosses the tracks to get a drink, only the care it owes to a licensee, not an invitee.—Murphy v. B. & M. (Mass.) 142 N. E. 782.

Classification Dispute Held for I. C. C.

The Kentucky Court of Appeals holds that whether worn army garments, sold as "barrack rags" should be classified as "clothing" for rate purposes was a question exclusively for the Interstate Commerce Commission, and an action for overcharge was not maintainable.—Louisville, Henderson & St. Louis v. Johns & Patterson (Ky.) 258 S. W. 312.

Assumption of Risk in Gravity Yard

The Connecticut Supreme Court of Errors holds that a practice in a gravity yard of leaving cars unbraked with several cars at the end of each track to serve as a bulwark was a reasonably safe practice, and a brakeman assumed the risk of cars rolling down after an unsuccessful attempt at coupling.—Dibble v. N. Y., N. H. & H. (Conn.) 123 Atl. 124.

Unauthorized Use of Streets for Terminal Purposes

Where a municipality was held entitled to require a railroad to discontinue the use of a street for making up and breaking up freight trains, the New Jersey Court of Chancery holds that equity may, in the interests of those served by the railroad, fix a time for the earliest practical discontinuance of such use.—City of Camden v. West Jersey & Seashore (N. J.) 123 Atl. 509.

Absence of Gates at Crossing Not Negligence

The New Hampshire Supreme Court holds that a newspaper vendor, who while selling papers to prospective passengers at a grade crossing was thrown by a frightened horse in front of a train, was at most a license; it cannot be said that the railroad was liable for his death because the crossing was not guarded by gates but only by a flagman.—Locke v. Payne (N. H.) 124 Atl. 668.

Unauthorized Assessment of Right of Way

The Vermont Supreme Court holds that a municipal assessment on a railroad right of way for street improvements on the same basis as assessments against all abutting owners rather than the basis of actual benefit conferred upon the right of way for railroad purposes is unauthorized. The right of way could only be benefited to the extent that its fitness as such is increased, and, except under unusual conditions, it is apparent that it could not be benefited by local improvements.—City of Barre v. Barre & Chelsea (Vt.) 123 Atl. 427.

Duty as to Trespassers Sitting or Lying on Track

The Kentucky Court of Appeals holds that where the engineer, immediately on discovering a person lying on the track, applied the emergency brakes, the train crew were not negligent in not blowing the whistle or ringing the bell, where the evidence showed that no warning would have been in time for the trespasser to get out of danger.—Davis v. Crawford's Adm. (Ky.) 261 S. W. 835.

Not Liable for Negligence of Shipper's Employee in Handling Crane

The Pennsylvania Supreme Court holds that a railroad was not chargeable with the negligence of a shipper's teamster whose improper use of the railroad's crane in loading a casting on a flat car injured one of the teamster's helpers.—Potter v. P. & R. (Pa.) 123 Atl. 791.

Engineer's Failure to Obey Train Order Bars Recovery for Injuries from Collision

The Texas Court of Civil Appeals holds that where an engineer's failure to obey a train order to wait at a specified place for a certain time, handed to him by the conductor, was the direct cause of a collision, he could not recover for injuries though the clearance card showed a clear track ahead.—Lancaster v. Jarrett (Tex. Civ. App.) 258 S. W. 271.

Texas Anti-Pass Law Held Not Unjustly Discriminatory

The Texas Supreme Court, reversing 197 S. W. 1006, holds that the Anti-Pass Law is not invalid nor arbitrary in its classification because it allows free or reduced transportation to federal officers, state, county and municipal officers, persons engaged in religious or charitable work and delegates to certain conventions.—St. Louis S. W. v. State (Tex.) 261 S. W. 996.

Employee Riding To and From Work on Free Pass Not a Passenger

The Georgia Court of Appeals holds that a railroad employee, carried to and from his work on a so-called free pass, but as a part of the contract for services, is not a passenger, and the railroad cannot claim that it is not liable to him for injuries due to its negligence because he was riding on a free pass.—Tharp v. Central of Georgia (Ga. App.) 121 S. E. 592.

Trainmen Not Required to Look Out for Signal Repair Men

The Missouri Supreme Court holds that trainmen are not required to look out for section men, which would include signal repair men, while working on or near the track, and are not negligent in failing to warn them, by bell or whistle or otherwise, unless required to do so by some established rule or custom.—Hunt v. Chicago, B. & Q. (Mo.), 259 S. W. 481.

Not Liable for Delivering Goods Without B. L.

The South Carolina Supreme Court holds that a carrier delivering an order notify shipment without surrender of the bill of lading, but taking the notify party's check for more than the invoice price, that party afterwards taking up the draft, was not liable to the shipper, no damage being shown, although the notify party attached the money in the bank as the shipper's for a balance on previous transactions.—Baughman v. Southern (S. Car.) 121 S. E. 356.

Excessive Speed and Bad Condition of Crossing

The Kentucky Court of Appeals holds that trainmen were guilty of gross negligence in approaching a much used crossing in an important section of a city at the rate of 50 miles an hour without keeping a proper lookout upon their engine, which, combined with a condition of the crossing which allowed the wheels of an automo-

bile to drop in and the machine to become stalled, would make the railroad liable for the result of a collision.—C. & O. v. Boren (Ky.), 259 S. W. 711.

Failure to Weigh Coal; Billing at Tipple Weights

The Pennsylvania Supreme Court holds that a carrier which failed to weigh coal, but billed it at tipple weights, was only entitled to charges based on minimum carload weights, in the absence of evidence of greater weights. But the carrier was not liable for excess charges made by the shipper against the consignee based on tipple weights, the carrier not being obliged to weigh to adjust accounts between buyer and seller.—N. Y. & P. v. N. Y. Central (Pa.) 124 Atl. 428.

Insufficient Evidence of Damage to Cattle by Delay in Transit

In an action for damages to a shipment of cattle by delay in transit the only contention was that by reason of the long time on the road they would not fill up on water before sale. The Oklahoma Supreme Court held that, there being no evidence tending to show that the cattle were of less value without the fill than they would have been with it, there was no evidence of damages for which the shipper could recover.—St. Louis-San Francisco v. Herman (Okla.) 224 Pac. 508.

Indemnity for Loss by Fire; Warehouse Near Side Track

The South Carolina Supreme Court holds that a contract indemnifying the railroad constructing a side track against loss by fire communicated by locomotives to buildings, etc., used by the shipper in connection with the business served by the side track, covers any property placed within the fire zone by the shipper as a consequence of his use of the side track, and he could not recover for the loss by fire of his warehouse situated near the track.—Williams v. Hines (S. Car.), 121 S. E. 600.

Risks Assumed by Flagman of Stopped Train

The Pennsylvania Supreme Court holds that the flagman of a train stopped on a southbound track who goes back to flag a train assumes the risk of being struck by a train moving south on the northbound track. A railroad is not negligent because it does not notify employees of its purpose to operate trains against traffic around a blockade. The fact that an engine cannot be stopped before it reaches a flag is a risk assumed by the flagman. He is not required to remain on the track on the chance of the engine stopping.—Oswald v. Hines (Pa.) 124 Atl. 328.

Connecting Carrier Has No Duty to Change Method of Cooling Fruit Car En Route

The Connecticut Supreme Court of Errors holds where the shipper in interstate commerce of perishable fruit has chosen ventilation as the method of protecting it, a connecting carrier cannot legally change, even by agreement, the method of cooling the car, en route, from ventilation contracted for to refrigeration by icing. It has no duty to examine the fruit to see whether the method chosen by the shipper is proving effective, with a view to changing it.—Cassone v. N. Y., N. H. & H. (Conn.) 123 Atl. 280.

Contract of Indemnity by Pipe Line Company Crossing Tracks

A railroad granted a pipe line company the right to lay a pipe line under its tracks, the grantee to indemnify the railroad for any loss therefrom, including the breaking of the pipe or the leaking of oil. While the railroad was under federal control, the pipe broke, and the leaking oil took fire from a switch engine, destroying an adjacent manufacturing plant. The owner recovered judgment against the Director General, who paid same. The federal district court for western Pennsylvania holds that the pipe line company was liable under its contract of indemnity, although negligence in operating the switch engine, shown not to have been wanton or wilful, contributed to the loss.—Payne v. National Transit Co., 300 Fed. 411.

Railroad Must Be Sued at Residence if Jurisdiction is Based on Diversity of Citizenship

The federal district court for southern Florida holds that under section 51 of the Judicial Code, an action against a railroad for personal injuries cannot be brought in a federal court of a district in which neither plaintiff nor defendant is resident if the jurisdiction is based only on diversity of citizenship. The privilege of being sued in the district of residence may be waived by the defendant entering a general appearance, but defendant may appear specially and insist on the privilege.—Haviland v. A. C. L., 299 Fed. 955.

Crossing Case; Erroneous Instruction

The Kentucky Court of Appeals holds that it is error to give an instruction authorizing recovery, in a crossing case, for a failure to give warning of the approach of the train, where the plaintiff automobilist, knew of such approach and was trying to cross the track before it arrived, which he claimed he could have done but for the defective condition of the crossing. He was not, however, required to adopt another route because a portion of the ballast had been taken up from between the rails. He had a right to use the crossing, using due care under the circumstances.—L. & N. v. Croft (Ky.) 258 S. W. 679.

Municipal Ordinance Limiting Speed of Trains Held Invalid

The New Jersey Supreme Court holds that a municipal ordinance limiting the speed of trains within the city is illegal in view of the state railroad act of 1903, section 22, and the Public Utilities Acts turning over the regulation of railroad crossings to the Public Utilities Commission, which supersede other inconsistent legislation. A railroad's right to run its trains at such speed as it thinks proper on its own tracks where they are properly protected is recognized by this legislation.—A. C. v. City of Pleasantville (N. J.) 124 Atl. 357.

Passenger Must Prove Alleged Negligence

In an action for injury to a passenger the only evidence of the railroad's negligence was that plaintiff fell over a grip in the aisle and struck her leg against the side of a seat and that her leg was cut. There was no evidence as to what cut her leg. The Texas Court of Civil Appeals holds that it was not negligent to allow a suitcase to stand in the aisle, and it did not necessarily follow that the railroad was negligent if, as alleged, the injury had been caused by some sharp object in the seat. It is not sufficient to show that the company may have been negligent. The evidence must show that it was.—Wichita Valley v. Helms (Tex. Civ. App.) 261 S. W. 225.

Automobile Runs Into Train—Arkansas Statute

In a street crossing accident case proof for the railroad tended to show that the automobile ran into the train, striking the ninth car; proof for plaintiff was that the automobile was on the track and was struck by the front of the engine. The Tennessee Supreme Court holds that in the former event recovery could not be had for non-observance of the state statute requiring trains to give warning on entering or leaving cities or towns because of Acts 1917, c. 36, requiring automobiles to come to a full stop when from 10 to 50 ft. from the nearest rail at a crossing, since observance of this statute would make collision between an automobile and the side of a train almost impossible.—Southern v. Simpson (Tenn.) 261 S. W. 677.

Improper Loading of Tank Car by Shipper; Carrier Not Liable for Loss

In an action against a railroad for loss of oil by leakage from a tank car, it appeared that the condition of the outlet valve could not be seen through a load of oil and that the car was loaded by the shipper on its own premises, without supervision by the carrier, which did not own or furnish the car, and made no examination of it. The Supreme Court of the State of Washington holds that ordinarily improper loading by the shipper relieves a carrier from its common-law liability for safe delivery. The burden of defense is on the railroad. Evidence that corrosion of the outlet valve

discovered after the loss must have existed when the car was loaded was held admissible. Judgment for defendant was affirmed.—American Cotton Oil Co. v. Davis (Wash.), 224 Pac. 23.

Foreign Bill of Lading Specifying Normal Exchange Rate

Bills of lading for wool from Australia to Philadelphia specified freight in pounds, shillings and pence "Freight, if payable at destination to be at the rate of $4.866 exchange." The Pennsylvania Supreme Court holds that this provision controlled and precluded payment at current exchange rates. The freight was payable in American currency. The court said: "If payment was to be made on the basis of the current rate of exchange the shipment over American lines would be for a less sum in dollars than fixed by the tariffs filed with the Interstate Commerce Commission; this would be unlawful." The carrier's receipt in full for the freight bill at current exchange did not prevent it recovering at the specified rate.—Pennsylvania v. Cameron (Pa.) 124 Atl. 638.

Effect of New York Disk Signal Act

Reversing 205 App. Div. 763, 200 N. Y. Supp. 365, the New York Court of Appeals holds that an automobilist was not negligent as a matter of law in failing to look when 19 ft. from a crossing, his view before that having been completely obstructed; that it would be for the jury to say whether he was proceeding cautiously and carefully with his vehicle under complete control even if he did not happen to look until he was nearer the track than 19 ft.; and that the only new duty imposed on an automobilist by section 539 of the Railroad Law is to slacken speed at the 300 ft. mark. To what speed the act does not state. Two judges dissented, on the ground that the act means that the automobilist must approach the tracks with his vehicle under such control that he can stop it instantaneously or at will before going upon the tracks, and that, had the automobilist looked when he was 19 ft. or a little less from the tracks, and had he then had the car under complete control, the collision would not have happened.—Horton v. N. Y. C., 237 N. Y. 38, 142 N. E., 345.

Safety Appliance Act—Coupling and Uncoupling—Difference in Proof of Violation

The Circuit Court of Appeals, Sixth Circuit, in an action under the Safety Appliance Act for injury to a brakeman while attempting to uncouple cars, says that apparently coupling by impact will always occur automatically unless there is some defect or abnormal condition, therefore a failure to couple usually tends to show a coupler defect; but in uncoupling, the devices, however perfect they may be, will not work at all while there is a binding friction on the lifting pin, as when there is a pulling strain. Therefore a failure of the pin to lift may either indicate that the device is defective, or that the effort was made at the wrong time.

Whether a lever was defective because it was bent was held to be for the jury.

It was held error, though not prejudicial in this case, to refuse to give instructions defining the statutory phrase "going between the ends of the cars," leaving it open to the jury to say that even putting an arm or leg to the point within the corner of the car where the outer end of the operating lever is compelled to be, would indicate a violation of the statute.

It was held reversible error to refuse to instruct that if the brakeman's inability to make the cutting lever work the first time he tried was because of the friction between the coupler and the pin or the position of the two cars in relation to each other and not because of any defect in the coupling apparatus, the failure to operate from such cause would not tend to show violation of the act.—Pennsylvania v. Jones, 300 Fed. 525.

United States Supreme Court

Tariff Rule Requiring Written Order for Cars Cannot Be Waived by Carrier

A shipper of cattle sued an interstate carrier in the Arkansas courts for failure to furnish a car within a reasonable time after notice. The carrier defended on the ground that the shipper had not complied with the tariff rule approved by the Interstate Commerce Commission, providing that orders for cars must be given to the local agent in writing. The shipper was permitted to testify that he had notified the station agent orally and that the latter had accepted his oral notice; and the trial court refused to instruct the jury that the shipper could not recover without proving a notice in writing. Judgment on a verdict for plaintiff was affirmed by the Arkansas Supreme Court (157 Ark. 43). This judgment has been reversed by the Supreme Court of the United States, which holds that the shipper's contention that the rule requiring written notice was waived could not be sustained, and that the rule could not be waived. The transportation service to be performed was that of common carrier under published tariffs and the rule was a part of the tariff.—Davis v. Henderson. Decided October 27, 1924. Opinion by Justice Brandeis.

Picketing Strikers Held Entitled to Jury Trial

In Michaelson v. United States ex rel. Chicago, St. P., M. & O. (C. C. A. 7th Circuit) 291 Fed. 940, it was held that the provision of the Clayton Act, §§ 21, 22, requiring a jury trial in certain specified kinds of contempt of court was unconstitutional, in that it encroached upon the equity jurisdiction intended by the federal Constitution. The petitioners were striking employees of the railroad, and, with others, were proceeded against by bill in equity for combining and conspiring to interfere with interstate commerce by picketing and the use of force and violence, etc. After a hearing, preliminary injunction was granted. Subsequently, proceedings in contempt were instituted in the district court, charging violations of the injunction. The petitioners' demand for a jury trial was refused and they were adjudged guilty, sentenced to pay fines and to imprisonment until the fines were paid. The judgments were affirmed by the Circuit Court of Appeals (291 Fed. 940). The case was brought to the Supreme Court of the United States on writ of certiorari; and there decided on October 20, as briefly noted in the *Railway Age* of October 25, page 763.

The Supreme Court holds that the provision of the act requiring jury trial is constitutional. This provision is to the effect that wilful disobedience of any lawful writ, process, order, rule, decree or command of any district court of the United States or any court of the District of Columbia by doing any act or thing forbidden, if such act or thing be of such character as to constitute also a criminal offense under any statute of the United States or law of any state in which the act is committed, shall be proceeded against as in the statute provided. In all such cases the "trial may be by the court, or, upon the demand of the accused, by a jury," and "such trial shall conform, as near as may be, to the practice in criminal cases presented on indictment or on information."

The court said, in part: "The only substantial difference between such a proceeding as we have here and a criminal prosecution by indictment or information is that in the latter the act complained of is the violation of a law and in the former the violation of a decree. In the case of the latter, the accused has a constitutional right of trial by jury; while in the former he has not. The statutory extension of this constitutional right to a class of contempts which are properly described as 'criminal offenses' does not in our opinion invade the powers of the courts as intended by the Constitution or violate that instrument in any other way."

Subordinate points decided were:

1. In such a controversy it does not require the existence of the status of employment at the time the acts constituting the contempt are committed, in order to bring into operation the provision for a trial by jury.

2. The court did not discuss the contention that the acts alleged as constituting contempt did not also constitute criminal offenses. These acts consisted of "abusive language, assembling in numbers, picketing and other acts, for the purpose of intimidating and preventing men desirous of securing employment with the railway company from entering such employment. *Prima facie*, at least, this violated the statute of Wisconsin, where the acts were committed, R. S. 1921, section 4466c, and this is enough."

3. The jury provision of the statute is held to be mandatory, and not merely permissive.

The judgment of the court below was therefore reversed and the case was remanded to the district court for further proceedings in conformity with the opinion.—Michaelson v. United States ex rel. Chicago, St. P., M. & O. Decided October 20, 1924. Opinion by Mr. Justice Sutherland.

Labor News

Chairman Hooper Hits Labor Leaders

Railroad labor leaders in general and Warren S. Stone, chairman of the Brotherhood of Locomotive Engineers, in particular, were criticized by Chairman Ben. W. Hooper of the Railroad Labor Board in a statement issued last week. Brotherhood executives are characterized as "agitators" and are charged with "putting in overtime making war on the railroads in order to force government ownership" at a time when they know the railways are rendering the most efficient service ever offered by any transportation system in the world. "These men make vociferous demands for further reductions in freight rates in order to fool the farmers into voting for the LaFollette ticket."

Mr. Hooper declares that these labor leaders have "brought deep injury to laboring men and irreparable detriment to the nation" by permitting themselves to be betrayed into the adoption of the same system of propaganda utilized by the Socialists. "They do not mean at the outset to further the cause of Socialism, with a few exceptions," he said. "Samuel Gompers has fought Socialism all his life openly and above board. He has been largely instrumental in obstructing radicalism in its efforts to get control of organized labor."

Canadian Union Protests Claim That Wages Are Too High

As the result of an application to the Dominion Railway Board by the Tudhope-Anderson Company of Winnipeg and Orillia, Ontario, for a reduction of freight rates, the basis of which application was that freight rates were too high because of the extravagantly high wages, a memorandum has been submitted to the Railway Board by the Canadian Brotherhood of Railway Employees arguing that the wages of railway workers have not increased proportionately with the wages of other trades and occupations in Canada, over the 1913 level.

The statement of refutation from the railroad brotherhood declares that since 1913 the increase in railway freight rates has been considerably smaller than the average increase in prices of commodities carried by the railways, while the increase in the railwaymen's rates of pay has also been much smaller than in the case of wage rates in other occupations. Quoting from official statistics, the memorandum points out that the ratio of salary and wages to operating expenses in 1913 was 63.5 per cent. In 1923, the ratio was 60 per cent. It is contended that this is proof positive that actually wages and salaries form a smaller proportion of operating costs today than they did before the war. It is also declared that a smaller number of employees are operating a greater mileage of railways than in 1922 as compared with 1913, and consequently the average employee was giving proportionately greater service in 1922 than in 1913.

The railway brotherhood quotes figures compiled by the Dominion Bureau of Statistics showing that the average wages and salaries of all railway employees in 1923 was $1,381 per year, including presidents and other high-paid officials. The average wages for 1923 in the United States was $1,488. The brotherhood contends that when the proportion accounted for by high salaries is deducted the ordinary employee is not left with yearly earnings sufficient to maintain a fair standard of living. It is also pointed out that these earnings are obtained at a risk of life and limb far beyond that involved in other industries. The memorandum states that in 1913, 178,652 Canadian railway employees operated 29,304 miles of railway. In 1922, 165,635 railway employees operated 39,773 miles of railway. In ten years the number of employees was reduced by 13,017 and the number of miles of railway operated increased by 10,469 miles.

TRAFFIC from Chicago to California necessitated the operation of the California Limited of the Atchison, Topeka & Santa Fe in five sections on October 26 and 27, and the Navajo Limited in two sections on October 27 and 28. It is estimated that approximately 2,000 tourists left Chicago for California over the Santa Fe on October 26, 27 and 28.

Foreign Railway News

Metropolitan-Vickers to Electrify Australian Line

According to a cable dispatch from London to the Journal of Commerce (New York), a contract for the electrification of the suburban lines of the New South Wales Government Railways in the Sydney district has been awarded to the British electrical firm of Metropolitan-Vickers, Ltd. The work calls for an expenditure of some £500,000.

Great Western (England) Appoints Publicity Agent

The Great Western Railway has announced the appointment of W. H. Fraser of the office of the superintendent of the line to the post of publicity agent. Mr. Fraser will be recalled by readers of the *Railway Age* as a contributor to its columns of several articles on railway subjects, particularly those summing up developments in his country in the last two issues of the Annual Review Number.

British-Owned Railways in Argentina Prospering

In spite of the loss in exchange between Argentina and England most of the British-owned railways in that country were sufficiently successful in the fiscal year 1923-24 to maintain their regular dividends in English currency, according to Modern Transport (London). Current fiscal returns are said to be holding up well and give hope for another successful year; meantime the exchange situation is improving.

Expansion of Argentine Government Railways Forecast

The Argentine Government Railways will be greatly expanded if the congress of the country approves a report submitted to it by a committee calling for the expenditure of a total of $484,000,000 (Argentine paper—about $180,000,000 in United States Currency) at a rate of not to exceed $50,000,000 (paper) per annum. The money would be raised by issuing 6 per cent bonds to be amortized one per cent a year.

Railway Progress in Turkey

This year's building program of about 125 miles on the Angora-Sivas and Samsun-Sivas lines in Turkey has practically been completed, according to the Times (London) Trade Supplement. The 370 miles destroyed by the Greeks on the Anatolian Railways have been rebuilt and the improvements to locomotives and rolling stock have been so satisfactory that the Compagnie des Wagons Lits (International Sleeping Car Company) has contracted to run its sleeping cars regularly on the Konia-Constantinople and Angora branch of the railways. Such facilities did not exist before the war.

It is intended to construct secondary narrow-gage lines to connect the interior with the Anatolian Railways, and a start is to be made on the branch to Akserai. The government, together with the Banque du Crédit National, is building 120 miles of a line to Ergani Arada.

The lines running through Kars-Bayaid-Erzerum, originally built by the Russians during their occupation, have been repaired, and an extension is being made to the coal mines near Erzerum. These mines are rich in steam coal and are being developed by the government.

Along the fertile shores of the Black Sea railway construction is being pushed ahead. A contract for 36 miles of a line from Samsun to Bafra has been granted to a Turkish contractor in Constantinople. This line will open up a very fertile tobacco-growing belt.

A line of 90 miles from Eregli to Kara Dere is being built to serve the Eregli coalfields and the Kara Dere Timber Berths. An Italian group is negotiating for the concession to build a railway from Kastamuni *via* Boli to Angora.

War Interferes with China's Railways

PEKING.

At no time in her past history has civil war in China effected such a general paralysis of railway traffic as now.

There are two main theatres of war, a Northern and a Southern. Mobilization began on the Southern front August 25. Marshal Chi Shih-yuan, whose capital is Nanking seized all of the freight trains of the Shanghai-Nanking line at Nanking and began the transport of his troops to Kunshan, a station about 30 miles from Shanghai. Gen. Lu Tsung-hsiang, his opponent, whose capital is at Hangchow, has an ally in Gen. Ho Feng-lin, the Defense Commissioner of Shanghai, and these two in counter moves occupied the Shanghai-Hangchow-Ningpo lines. As Marshal Chi is acting under the orders of Wu Pei-fu, it was but natural that an understanding should be existent between the enemies of Chi and the arch enemy of Wu, Chang Tso-lin who began to mobilize the Manchurian forces at Chinhsien, for "autumn manœuvres," so he

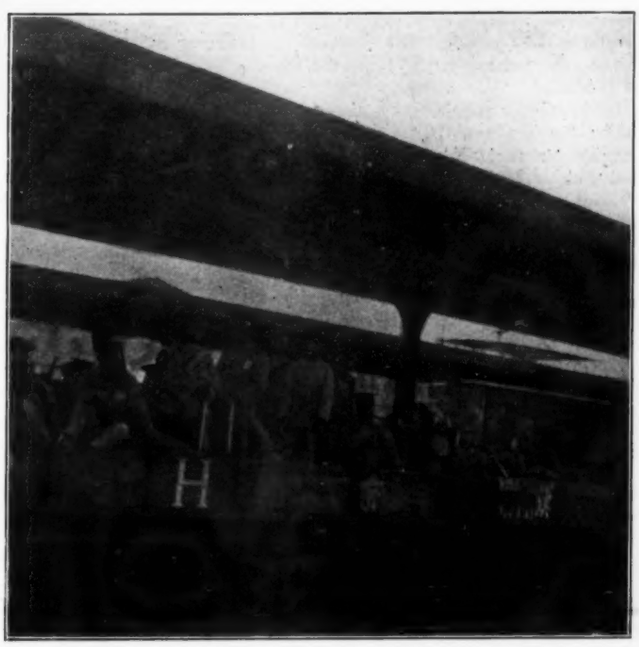
A Train of Airplanes Leaving Peking

announced. The countermove to this on the part of Wu Pei-fu was to concentrate available forces on the Manchurian frontier. Wu's forces have moved by two routes, one overland through the passes north of Peking, and the other via the Peking-Mukden line to Shanhaikuan.

Wu's concentration on Shanhaikuan began on September 13 and has continued to date. Your correspondent traveled in the face of this troop movement on the following day, most of the distance between Shanhaikuan and Peking. Twenty troop trains were encountered in the course of twenty hours, fifteen had reached Shanhaikuan the day before, and the same rate of movement has continued ever since. Another observer reports that 256 extra trains carrying either troops or munitions have arrived in the Lanhsien-Shanhaikuan sector. For the most part these train loads have consisted of men, animals, arms and camp equipage. On the trains observed, the amount of food stuff and ammunition was surprisingly small. Of course, it would be expected that ammunition would move principally by separate trains; foodstuffs, however, can be brought by sea to Shanhaikuan and undoubtedly this method is being used in order to make the best use possible of the rails. So far about 70,000 men and 8,000 transport, cavalry and artillery animals have been delivered within the northeastern sector.

This movement of about fifteen trains a day in one direction has effectively stopped all other traffic except for one passenger train a day in each direction, which by the Boxer Protocol must be maintained between Peking and the sea. This movement means a transportation efficiency which is very mediocre even for China. The average movement in the normal course of business over this same section of track is thirty-six trains per day with peak performances as high as forty-four. But on the whole the military handling of traffic is far superior to anything the war-lords have exhibited in the past. For one thing, the militarists have learned how to get increased train loads. Many of the trains observed had more than thirty cars and the average is said to be about twenty-five. They have also learned a few things about co-operating with the railway staff, so that for the most part station forces have not deserted. Former mobilizations have been marked by the beating and even shooting of stationmasters, the looting of their quarters and the assumption of personal charge of the railway facilities by soldiers who did not know that trains can not pass each other on single track. This time (except for a few lapses) officers take charge of the stationmasters, but leave these workmen in charge of the technical performance of transportation duties. Wu Pei-fu has effected a skeleton organization attached to his general staff for the handling of railway transport which in form resembles very closely the American army plan. However, he has made the mistake of appointing as regional directors men who are political railroaders rather than men who know anything of the technique of getting trains over the road or repairing either roadway, structures or rolling stock. However, these political directors may attach such practical men to their personal staffs. So far nothing has been done by way of formation of a demolition or reconstruction corps. Both of these will be necessary if the war is long drawn out. The reconstruction corps will be necessary if Wu is to have yard room for the thousands of cars which he insists on keeping close to the front. Already the Lanchow bridge, which is the Achilles heel of his communications, has been subject to an air attack, unsuccessfully.

But the principal defect in the handling of his rail transport lies in Wu's failure to move his empties back out of the zone of activities. He has stripped the Peking-Hankow, the Peking-Suiyuan and the Tientsin-Pukow of almost every freight car, passenger car and engine. Only one train a day in each direction is now being operated on those lines. All of these thousands of cars and hundreds of engines are massed in the hundred kilometres between Lanhsien and Shanhaikuan together with what equipment belonging to the Peking-Mukden line Chang Tso-lin left behind two years ago. This rolling stock occupies very close to fifty kilometres of track. Fortunately for Wu, he has available a great



Infantry en Route to Shanhaikuan

trackage belonging to the Kailan Mining Administration at Chinwangtao and southerly which can be used for storage purposes. But even so, his terminals are sadly congested and offer a most tempting objective to Chang's numerous aircraft.

A second defect in Wu's arrangements is the utter dependence on the "staff system" of train movement. Hence trains arrive and depart without plan. The minor accidents which cause delays result in the bunching of trains at intermediate stations where there is insufficient accommodation and once a movement is started in one direction, the reverse movement of empty cars can scarcely be attempted.

The ability to learn which is evidenced by this year's performance, however, justifies the expectation that ways and means

of overcoming these defects in plan and execution will soon be forthcoming. The progress which has been made up to date does not compare unfavorably with that made by the Union commanders during the first year of the Civil War in America. Practically all of the evils which during past years have been laid at the door of the military when it used the railway had their counterpart in the early practices of '61, even to the shooting of railway men when they attempted to follow the orders of railway officials instead of the orders of the military.

A certain capacity for adaptation is also being evidenced. For example, a train of airplane parts hauled by a heavy engine arrived at Peitaiho Junction destined to the Beach station. Railway orders were positive against the running of heavy engines over the bridges of this branch. The military reduced speed and ran the train through safely. Five colonels were ordered to move from a nearby station to Shanhaikuan, but by an oversight the seniority of rights was omitted from the order. To avoid the loss of "face" which the prior movement of one over the other would entail, the five trains were coupled into what is the longest train ever hauled in China, 127 cars, and moved through without mishap. These incidents coupled with the recent pressure brought to bear by Wu Pei-fu in favor of additional railway construction leads to the hope that military influence will succeed where commercial pressure has failed in extending the Chinese railway system.

So far, the war in the north has consisted of no more than outpost skirmishes and a few attempted bombing raids by air. But if the mediators who now are at work should fail, the railway zone will undoubtedly be the scene of the principal operations. While Chang Tso-lin's threatened advance upon Peking is by way of the overland route through the Jehol pass, Wu's counter move must be along the railway. Any considerable advance by Wu's forces beyond the Jehol pass would subject their camel trains to constant attacks from the Mongol and Cossack cavalry supporting Chang, an arm of the service in which Wu's army is no match for Chang's. However, Wu can drive up the railway toward Mukden on at least equal terms with Chang, while the Jehol pass can be held by a comparatively small co-operating division. Hence, if the reported mediation fails, the railway zone will be the field of battle.

International politics may also be involved in connection with the railways affected. Of course, British interests are suffering heavily on the Shanghai-Nanking, Shanghai-Hangchow-Ningpo and Peking-Mukden lines. British held bonds of the Tientsin-Pukow line are threatened with default in October. But Japanese interests in Manchuria are involved in a peculiar fashion. By the terms of the original Chinese Eastern contract, to which the Japanese fell heir on the South Manchurian line, the Chinese have the right to move troops over the line on payment of half rates. Chang has been allowed to move some of his troops over the Changchun-Mukden portion. Now Wu Pei-fu asks the same privilege. The request is by no means an idle gesture, for Wu holds the loyalty of what there is of the Chinese navy and so could transport troops by sea to Dairen and approach Mukden from that route. This of course would make the Dairen-Mukden section also a theatre of war. Japan has declared neutrality as between the two factions and will probably try to prevent Chang from using the Changchun-Mukden section again. But if Chang finds himself in desperate straits, it is possible that he might try to seize the line temporarily. Whether this would lead to the occupation of Manchuria by Japanese troops or would bring about an open alliance of the Japanese with Chang, like the lamb with the lion, no one knows. The possibilities, however, are the subject of lively conjecture and the effect which this might have upon other nationalities which have spheres of investment in China indicates how Manchuria qualifies as the Asian Balkans with respect to international relations.

A JOINT CONFERENCE of carriers and shippers in the Central Freight Association territory will be held on November 14 in the Hotel LaSalle, Chicago, to consider a proposal for the revision of class freight rates between points in the Central Freight Association territory (which includes Chicago) and points east of Buffalo and Pittsburgh, as submitted by the carriers in the Central Freight Association, the Eastern Trunk Line Association and the New England Freight Association. Preceding the joint conference with the carriers shippers in the Central Freight Association territory will meet on November 13 to discuss the proposals and take such action as is deemed proper for the conference with the carriers.

Equipment and Supplies

Locomotives

THE PEORIA-PEKIN UNION has ordered three 0-8-0 switching locomotives from the Baldwin Locomotive Works.

THE HYDRAULIC PRESS BRICK COMPANY has ordered one 0-4-0 switching locomotive from the Baldwin Locomotive Works.

THE DELAWARE, LACKAWANNA & WESTERN has ordered two three-cylinder Mountain type locomotives from the American Locomotive Company. These locomotives will have a total weight in working order of 392,000 lb.

THE SOUTHERN RAILWAY has ordered 5 Pacific type locomotives from the American Locomotive Company. This is in addition to the 50 locomotives placed with the same builder, as was reported in the *Railway Age* of October 11.

THE WABASH, reported in the *Railway Age* of November 1 as inquiring for 50 Mikado type locomotives, has ordered this equipment from the American Locomotive Company. These locomotives will have a total weight in working order of 340,000 lb. Of this number, five are to be three-cylinder locomotives.

Passenger Cars

THE GULF, TEXAS & WESTERN has ordered one gasoline motor baggage car from the J. G. Brill Company.

THE ASHERTON & GULF has ordered, through the Sugarland Industries, one combination passenger and baggage gasoline motor car, from the J. G. Brill Company.

THE SUGAR LAND RAILWAY has ordered, through Sugarland Industries, from the J. G. Brill Company, one combination passenger and baggage gasoline motor car.

THE SOUTH AFRICAN RAILWAYS are asking for bids for 83 motor coach steel underframes and 83 motor coach bodies (wood or steel), exclusive of electrical equipment. Trucks and electrical equipment are not included. Bids should be sent to the Secretary, High Commissioner for the Union of South Africa, Trafalgar Square, London, W. C. 2, to reach him not later than December 10, and should be marked "Tenders for Electrification, Cape Town Suburban Railways." Specifications can be secured from the above Secretary, or after November 13, from the General Manager of Railways, Johannesburg, South Africa. Merz & McLellan, consulting engineers, 32 Victoria street, London, S. W. 1, can furnish technical details.

Freight Cars

THE WESTERN FRUIT EXPRESS is inquiring for 1,200 underframes.

THE CENTRAL OF GEORGIA is inquiring for 10 underframes for caboose cars.

THE PENNSYLVANIA is expected to enter the market soon for a large number of repairs to freight cars.

THE GREAT NORTHERN has ordered 500 stock car bodies from the Siems-Stemble Company and is now inquiring for 1,000 underframes.

THE BALTIMORE & OHIO is inquiring for 3,000 car ends and parts for under car repairs to 2,000 hopper cars. This company is expected to repair 6,000 hopper cars in its own shops.

THE CENTRAL OF NEW JERSEY, reported in the *Railway Age* of October 11 as inquiring for one box car of 50 tons' capacity and 49 box cars of 40 tons' capacity, has ordered this equipment from the Standard Steel Car Company.

THE ST. LOUIS-SAN FRANCISCO, reported in the *Railway Age* of October 4 as inquiring for 400 underframes, has ordered

this equipment from the Tennessee Coal, Iron & Railroad Company.

THE SOUTHERN RAILWAY during the month of October placed orders for a total of 5,595 freight cars, as was reported in the *Railway Age* of October 4, October 18 and November 1. The complete tabulation of the cars follows:

No.	Class	Builder	Railroad
2,000	Box	American Car & Fdy. Co.	Southern Railway
250	Flat	American Car & Fdy. Co.	Southern Railway
1,000	Box	Mt. Vernon Car Mfg. Co.	Southern Railway
250	Stock	Tenn. Coal Iron & R.R. Co.	Southern Railway
150	Stock	Tenn. Coal Iron & R.R. Co.	Mobile & Ohio
150	Hopper	Kilby Car & Fdy. Co.	Mobile & Ohio
200	Gondola	General Amer. Car Co.	Mobile & Ohio
595	Box	American Car & Fdy. Co.	Mobile & Ohio
1,000	Box	American Car & Fdy. Co.	Georgia Southern & Florida
5,595			

As above noted these cars have all previously been reported in the *Railway Age*.

Iron and Steel

THE NEW YORK CENTRAL is inquiring for 300 tons of steel for repairs to bridges in Indiana.

THE GREAT NORTHERN has ordered 500 tons of structural steel for bridge work from the Minneapolis Steel & Machinery Company.

THE CHICAGO, MILWAUKEE & ST. PAUL has placed an order for rail, angle bars, spikes, bolts and tie plates with the Illinois Steel Company and the Inland Steel Company.

THE MISSOURI PACIFIC has ordered 10,000 tons of rails from the Inland Steel Company, 10,000 tons from the Illinois Steel Company, 8,000 tons from the Tennessee Coal, Iron & Railroad Company and 2,000 tons from the Colorado Fuel & Iron Company.

October Locomotive Shipments

The Department of Commerce has announced October shipments of railroad locomotives, from the principal manufacturing plants, based on reports received from the individual establishments, as follows:

Year and Month	Locomotives: Shipments			Locomotives: Unfilled orders		
1923	Total	Domestic	Foreign	Total	Domestic	Foreign
January	229	217	12	1,788	1,699	89
February	207	196	11	2,220	2,141	79
March	282	269	13	2,316	2,214	102
April	217	201	16	2,204	2,111	93
May	238	228	10	2,150	2,045	105
June	232	221	11	1,958	1,854	104
July	239	211	28	1,738	1,652	86
August	272	259	13	1,497	1,406	91
September	335	313	22	1,178	1,102	76
October	310	295	15	977	915	62
November	299	270	29	691	656	35
December	329	305	24	387	365	22
1924						
January	151	147	4	376	344	32
February	99	92	7	499	466	33
March	132	128	4	534	494	40
April	73	63	10	640	586	54
May	111	93	18	643	589	54
June	145	134	11	531	462	69
July	140	130	10	483	416	67
August	139	121	18	361	306	55
September	104	79	23	386	333	53
October	96	78	18	462	398	64

Machinery and Tools

THE SOUTHERN RAILWAY has placed an order for a 5-ft. radial drill press.

THE DAY-EVANS IRON WORKS has placed an order for a 42-in. car wheel borer.

THE KANSAS CITY SOUTHERN has placed an order for a combination journal turning lathe.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for the following list of motor-driven machine tools:

1—Greenlee, No. 426, medium duty self-feed rip saw.
1—Greenlee, No. 453, automatic cut-off saw.
1—Four-side, 16-in. by 20-in. wood planer.
1—4-in. molder and matcher.
1—12-in. jointer.
1—Belt sander.
1—Four-spindle horizontal boring machine.
1—42-in. band saw.
1—12-in. round head 12-ft. table car grainer.
1—Swing saw with 20-in. saw.
1—12-in. swing 8-ft. center wood-turning lathe, with motor in head.
1—Three-knife, round head, 16-in. Universal wood worker or jointer.
2—Fay & Eagan, No. 425, double-head, ball-bearing shapers, with double end.
1—Bench trimmer.
1—Jig saw.
1—Medium duty direct-connected self-feed rip saw.
1—Combination rip and cut-off or variety saw.
1—Grindstone complete, with 36-in. by 5½ in. stone.
1—Router with 36-in. table.

Track Specialties

THE NEW YORK CENTRAL LINES will receive bids until 12 o'clock noon, November 17, for angle bars, track bolts and tie plates required by the New York Central Lines.

Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, November 14, for two steel tugboats.

Signaling

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company an electric interlocking, for installation at Voorheesville, N. Y., where the West Shore Railroad crosses the Delaware & Hudson. The machine will have nine working levers and seven spare spaces.

THE ELGIN, JOLIET & EASTERN has recently had completed by the Miller Train Control Corporation a contract for equipping 30 locomotives which are operated over the Chicago & Eastern Illinois, with automatic stops. This work was begun on August 21 and completed on September 29. The engines which are equipped are of the large Mikado type used to haul long and heavy coal trains from the Illinois mines to the industrial districts near Chicago. The device as installed consists of the straight automatic stop with permissive feature in accordance with the provision of the latest order of the Interstate Commerce Commission. It permits the engineman to forestall an automatic brake application at de-energized ramps. The simplicity of design and ease of application of this device made it possible for one mechanic and helper and one pipe fitter and helper to equip these engines at the rate of practically one engine each day and required no locomotives to be held out of service for applying the device.

LOCOMOTIVE REPAIR SITUATION

Date, 1924	No. locomotives on line	No. serviceable	No. stored serviceable	No. req. classified repairs	Per cent	No. req. running repairs	Per cent	Total req. repairs	Per cent
February 1	64,377	53,586	4,116	5,919	9.2	4,872	7.6	10,791	16.8
March 1	64,431	53,127	3,800	6,047	9.4	5,257	8.1	11,304	17.5
April 1	64,363	52,805	4,648	6,128	9.5	5,430	8.4	11,558	17.9
May 1	64,330	52,890	6,079	6,105	9.5	5,335	8.3	11,440	17.8
June 1	64,373	53,498	6,661	6,099	9.5	4,776	7.4	10,875	16.9
July 1	64,416	53,382	7,117	6,035	9.4	4,999	7.7	11,034	17.1
August 1	64,486	53,381	7,152	6,073	9.4	5,032	7.8	11,105	17.2
September 1	64,582	53,618	6,762	6,023	9.3	4,941	7.7	10,964	17.0
October 1	64,538	53,209	5,424	6,175	9.6	5,154	8.0	11,329	17.6

Supply Trade News

Samuel Hale, formerly vice-president of the Interstate Iron & Steel Company, Chicago, died at Santa Fe, New Mex., on Oct. 25.

W. G. Cook has been appointed manager of packing sales, Chicago branch of the **United States Rubber Company,** with headquarters at Chicago.

Warren Corning & Co., Chicago, have been appointed distributing agent to handle culvert pipes, by the **Wheeling Steel Corporation,** Wheeling, W. Va.

The Austin Company, Cleveland, Ohio, has moved its San Francisco, Cal., offices to 244 Kearny street. The office at Los Angeles has been moved to 777 East Washington street.

E. T. Wade has been appointed representative in the southern territory for the **Franklin Railway Oil Company,** Franklin, Pa. Mr. Wade's headquarters are at 1125 Mutual building, Richmond, Va.

T. B. H. Askin has been appointed sales manager for the intermountain division of the **American Managanese Steel Company, Incorporated.** Mr. Askin's headquarters are at the company's Denver, Colo., office.

H. V. Beronius has been appointed representative in Iowa, Kansas, Nebraska, Oklahoma and Northwestern Missouri, with headquarters at 33 Linwood Terrace, Kansas City, Mo., for the **Gibb Instrument Company,** Bay City, Mich.

O. A. Neidermyer, sales engineer of the **Edison Storage Battery Company,** with headquarters at Chicago, has been transferred to San Francisco, Cal., to succeed **M. W. McMillan,** sales engineer, who in turn has been transferred to Chicago.

The Northwest Engineering Company, Chicago, manufacturers of cranes, drag lines, and shovels, has appointed the **Beckwith Machinery Company,** Pittsburgh, Pa., as its representative in that city and **The Collins-Kay Company,** Los Angeles, Calif., representative in that city. **W. W. Mutter** has been placed in charge of the newly opened office at 23 Main street, San Francisco, Calif.

Obituary

Charles S. Gawthrop, vice-president of the American Car & Foundry Export Company, died at his house in New York City, on October 31, after a short illness, from pneumonia. Mr. Gawthrop was born in Wilmington, Del., on November 21, 1868. After graduation from the University of Pennsylvania, in the class of 1888, he entered the employ of the Jackson & Sharp Company, railway car builders, at Wilmington. In 1901 when that company was acquired by the American Car & Foundry Co. Mr. Gawthrop became district manager of the Jackson & Sharp plant, which position he held until the formation of the Amercian Car & Foundry Export Co. in 1913. He then became a director and vice-president of the new corporation and continued in those offices until his death.

C. S. Gawthrop

Railway Construction

CANADIAN NATIONAL.—This company will proceed at once with the construction of the 21-mile branch line from Turtleford, Sask., to Hafford.

CHICAGO & ALTON.—This company has awarded a contract to Mulville Brothers, Alton, Ill., for the construction of six miles of second track between Manchester, Ill., and Murrayville.

CHICAGO, BURLINGTON & QUINCY.—This company jointly with the Chicago, Rock Island & Pacific, the Atchison, Topeka & Santa Fe and the city of St. Joseph, Mo., will construct a viaduct across the railways' tracks at Sixth street, in St. Joseph, at an estimated cost of $133,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded a contract to the Priester Construction Company, Davenport, Ia., for the construction of a brick and frame addition to the roundhouse at Rock Island, Ill., to cost $25,000.

GRAND TRUNK.—This company closed bids on October 18 for the construction of an extension, 105 ft. by 80 ft., to an ice storage house at Port Huron, Mich., to cost $40,000. This company is constructing with company forces 13 miles of second main track on its freight line between Swartz creek and Belsay, Mich. This project involves the construction of four bridges and will cost $600,000. Company forces are also constructing eight additional tracks with a capacity of 600 cars in the Belsay yards at Flint, Mich., and a west bound passing track of 105 cars capacity at Belsay, the projects to cost $175,000. This company has awarded a contract to the Chicago Bridge & Iron Works, Chicago, for the erection of a 100,000-gal. steel water tank at Lapeer, Mich., and a 50,000-gal. steel water tank at Greenville, Mich., to cost $17,000.

GREAT NORTHERN.—This company plans the construction of a one-story steel and concrete mail building at Spokane, Wash.

GREAT NORTHERN.—This company has authorized the construction of the following: A terminal postoffice station at Seattle, Wash.; the enlarging of the tie treating plant at Somers, Mont.; second track from Kelly Lake, Minn., to Emmert; additional yard tracks at Allouez, Wis.; the replacement with new steel of the old steel in the bridge over the west channel of the Mississippi river at Minneapolis, Minn.; and connecting tracks from the bridge to the passenger station, including 268 ft. of new steel bridge.

GULF COAST LINES.—This company has awarded a contract to the Orange Car & Steel Company, Orange, Tex., for the construction of a machine shop, power house and store house at Dequincy, La., at a cost of approximately $50,000.

KANSAS CITY SOUTHERN.—This company plans the construction of a passenger station at Lake Charles, La.

LOS ANGELES JUNCTION.—This company has applied to the Interstate Commerce Commission for permission to construct eight miles of railroad in the Vernon industrial district, Los Angeles, Calif. The line will connect with all other roads serving Los Angeles, including the Pacific Electric, and will serve principally the Union Stock Yards and the Central Manufacturing District.

MINNEAPOLIS & ST. LOUIS.—This company contemplates the construction in 1925 of car repair shops at Clear Lake, Ia.

MISSOURI-KANSAS-TEXAS.—This company plans the construction of a roundhouse and transfer yard at Eureka, Tex., a suburb of Houston.

PENNSYLVANIA.—This company has awarded to the Brann & Stuart Company, Philadelphia, a contract for the reconstruction of a highway bridge over the Delaware & Raritan canal feeder at Trenton, N. J., to cost approximately $50,000.

WABASH.—This company has purchased 109 acres of land in North Kansas City, Mo., which will be used as the site for a new freight terminal. In addition to a large yard, a roundhouse, machine shop, coaling station, ice plant and office buildings will be constructed.

Railway Financial News

AMERICAN REFRIGERATOR TRANSIT COMPANY.—*Equipment Trusts.*—Kuhn, Loeb & Co. have purchased $3,975,000 5½ per cent equipment trust certificates, series E, maturing in equal amounts in annual instalments from November 1, 1925, to November 1, 1939, both inclusive, which have been distributed privately. These certificates will be secured by new refrigerator cars costing about $5,300,000, of which 25 per cent in cash is to be paid by the company. The American Refrigerator Transit Company is owned by the Missouri Pacific and Wabash Railroads jointly.

ARKANSAS & MEMPHIS RAILWAY BRIDGE & TERMINAL COMPANY.—*Bonds.*—The Interstate Commerce Commission has authorized the Chicago, Rock Island & Pacific, the Missouri Pacific and the St. Louis Southwestern to sell $1,177,000 each of this company's first mortgage 5 per cent gold bonds at not less than 90 and has dismissed the application for authority to assume obligation and liability in respect of the bonds.

CHESAPEAKE & OHIO.—*Lease.*—The Interstate Commerce Commission has made public a proposed report of Examiners Davis and Young recommending a finding by the commission that the proposed acquisition of control of the Ashland Coal & Iron, the Long Fork and the Millers Creek railways, in accordance with the terms of the leases described in the application, be found not to be in the public interest.

CHICAGO, PEORIA & ST. LOUIS.—*Date of Sale.*—Master in Chancery C. C. Briggle has designated November 20 as the date of sale of the Chicago, Peoria & St. Louis, the sale to take place at noon on the south steps of the Sangamon county court house, Springfield, Ill. Under a decision of the Illinois State Supreme Court rendered on October 28, which affirms the decree of foreclosure and sale as entered by Judge E. S. Smith of the circuit court of Sangamon county, the property may be sold in its entirety or in parcels.

CHICAGO, ROCK ISLAND & PACIFIC.—*Collateral for Government Loan.*—The Interstate Commerce Commission has issued an amended certificate authorizing the release of $900,000 Arkansas & Memphis Railway Bridge & Terminal Company first mortgage 5 per cent bonds as part collateral for a government loan of $7,862,000 and the substitution of Rock Island, Arkansas & Louisiana first mortgage 4½ per cent bonds.

CUMBERLAND VALLEY.—*Valuation.*—The Interstate Commerce Commission has found the final value for rate-making purposes of the property owned and used for common carrier purposes to be $386,203 as of June 30, 1917, and that of the property used but not owned to be $18,000.

DETROIT & TOLEDO SHORE LINE.—*Guaranty.*—The Interstate Commerce Commission has certified the amount of this company's guaranty for the six months' period following the termination of federal control as $148,585.

ERIE.—*Lease Negotiations Fail.*—See New York, Chicago & St. Louis.

GULF TERMINAL.—*Valuation.*—The Interstate Commerce Commission has found the final value for rate-making purposes of this company's property owned and used for common-carrier purposes, as of June 30, 1915, to be $495,148.

MAINE CENTRAL.—*Preferred Dividend.*—The directors have declared a quarterly cash dividend of $1.25 per share on the preferred stock, payable December 1 to holders of record November 15. This is the first dividend declared since September 1, 1920.

Announcement was made that the plan authorized by the stockholders last April to issue $600,000 par value of additional preferred stock, to be distributed to preferred stockholders in payment of accumulated and unpaid dividends had been brought before the Interstate Commerce Commission on August 8, but had since been withdrawn from the consideration of the commission. In regard to future policy the following statement was made by President Morris McDonald:

"It is proposed to continue payment of quarterly dividends hereafter if net profits of the company are available therefor, having in mind that, as the cash position of the company and its net profits warrant, payments on account of the dividends accumulated to September 1, 1924, amounting to $20 per share, will be made from time to time until the full amount is paid."

MINARETS & WESTERN.—*Operation of Lumber Lines.*—The Interstate Commerce Commission has authorized this company to operate in interstate commerce two lines constructed to serve a lumber company, from Friant to Crane Valley Dam, Calif., 39.3 miles, and from Pinedale Junction to Pinedale, Calif., 4.6 miles.

MINNEAPOLIS & ST. LOUIS.—*Protective Committees.*—The committee representing the Minneapolis & St. Louis first consolidated mortgage 5 per cent gold bonds of 1934 and Des Moines & Fort Dodge first mortgage 4 per cent gold bonds of 1935 has issued a notice urging holders of these bonds to deposit them immediately with the American Exchange National Bank that action may be taken effectively to protect their interests. A substantial amount of bonds of each issue has already been deposited. The committee comprises Walter H. Bennett, chairman; Frederick J. Lisman and L. Edmund Zacher, with W. C. Robertson, secretary, 128 Broadway, New York City.

A new protective committee has been formed to represent the interests of the holders of the Merriam Junction-Albert Lea first mortgage bonds, due June 1, 1927. The committee consists of Samuel Sloan, vice-president of the Farmers Loan & Trust Company, New York, Beekman Winthrop of Robert Winthrop & Co. and Lewis B. Curtis, president of the Peoples Savings Bank of Bridgeport. P. C. Beardslee, 22 William street, New York, is secretary and Geller, Rolston & Blanc, counsel.

MISSOURI PACIFIC.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $3,900,000 of 5 per cent equipment trust certificates, to be sold to Kuhn, Loeb & Co., at 98¼.

MOBILE & OHIO.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized an issue of $1,650,000 of equipment trust certificates to be sold at not less than 96½.

NATIONAL STEEL CAR LINES.—*Equipment Trusts.*—Freeman & Co. has sold $6,000,000 6 per cent equipment trust certificates, series E, unconditionally guaranteed by endorsement as to principal and dividends by the Sinclair Consolidated Oil Corporation. The certificates, issued under the Philadelphia plan, mature serially 1925 to 1932 and are offered at prices to yield from 4.25 per cent to 6 per cent. The issue is secured by a first lien on 5,247 standard steel tank cars used in the distribution of the products of subsidiaries of the Sinclair Consolidated Oil Corporation. The cars are currently appraised in excess of $7,900,000, or 131 per cent of the total face value of the certificates to be issued.

NEVADA COPPER BELT.—*Valuation.*—The Interstate Commerce Commission has found the final value of this company's property for rate-making purposes to be $721,112 as of June 30, 1917.

NEW MEXICO MIDLAND.—*Valuation.*—The Interstate Commerce Commission has found the final value for rate-making purposes of the property owned and used for common carrier purposes to be $140,265 as of June 30, 1916.

NEW YORK, CHICAGO & ST. LOUIS.—*Lease Negotiations Deadlocked.*—E. N. Brown, chairman of the board of the Pere Marquette, following a meeting of the directors of that road on November 5, admitted that negotiations for the leasing of the property by the Nickel Plate appeared to be hopelessly deadlocked. Mr. Brown said:

"We have been unable to find a solution of the lease problem. It now looks as though the lease of the Pere Marquette to the Nickel Plate was improbable, and the other roads are facing the same problem. The chief difficulty, to our way of thinking, is that the proposed lease does not protect the stockholders, for which reason we find it impossible to assent to it."

The executive committee of the Erie board of directors has appointed a sub-committee of three to negotiate with the Van Sweringen interests regarding the various questions involved in the consolidation. The committee consists of George F. Baker, chairman, Leonor F. Loree and Grenville Kane. This action of the Erie is in line with that of the Pere Marquette which has already appointed a similar committee.

PERE MARQUETTE.—*Lease Negotiations Fail.*—See New York, Chicago & St. Louis.

PITTSBURGH & WEST VIRGINIA.—*Proposed Segregation.*—A special meeting of the stockholders has been called for December 1 to vote on the proposed segregation of the Pittsburgh Terminal Coal Company from the railroad.

SOUTHERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue nominally $5,000,000 of development and general mortgage 4 per cent bonds payable April 1, 1956.

SUSQUEHANNA & NEW YORK.—*Application for Lease Denied.*—The Interstate Commerce Commission has denied the application of the Susquehanna & New York for authority to acquire control by lease of the Tionesta Valley. Both companies are controlled by the Central Leather Company and the commission says that as long as the Tionesta company is controlled by an industry which furnishes the major portion of its traffic, a separate record should be kept of its operations and there is no showing of economies in the public interest which in any way offsets that desirability. It is also stated that the reports of the Tionesta indicate surplus earnings subject to recapture which, if the lease were made effective, would be available for the use of the applicant. Commissioner Potter strongly dissented.

See also article on another page of this issue.

TEXAS & PACIFIC.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $3,285,000 of 5 per cent equipment trust certificates, to be sold to Kuhn, Loeb & Co., at 98¼.

TIONESTA VALLEY.—*Lease Denied.*—See article on another page of this issue.

TRINITY & BRAZOS VALLEY.—*Guaranty.*—The Interstate Commerce Commission has issued a final certificate placing the amount of this company's guaranty for the six months' period following the termination of federal control at $541,576, of which $26,576 was still due to be paid on the final certificate.

WACO, BEAUMONT, TRINITY & SABINE.—*Stock Increase.—Extensions Planned.*—An increase of the capital stock from $370,000 to $1,113,000 has been authorized by the state attorney general of Texas. It is explained by R. C. Duff of Houston, president of the road, that this increase is in line with the plans for completing the organization of the company and to provide for extending of the road from Livingston to Port Arthur, about 100 miles.

The original application of the company to the Interstate Commerce Commission provided for extending the line from Livingston through Beaumont to a point two miles north of Port Neches. The commission, however, in granting the application stipulated that the southern terminus of the road should be at a point nine miles north of Port Arthur. This point, Mr. Duff said, would make the road end in a swamp. He has made a new application for permission to extend the road so it will serve Port Neches and Port Arthur, with their several large oil refineries and other industries. This application is to be heard at Washington, November 24. Mr. Duff announced his intention of later asking for permission to extend the road from its western terminus at Weldon, to Waco, about 110 miles.

WESTERN MARYLAND.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $5,658,875 of first and refunding 5 per cent bonds to partly reimburse the treasury for expenditures since 1917.

Dividends Declared

Cleveland & Pittsburgh.—Regular guaranteed, 87½ cents, quarterly; special guaranteed, 50 cents, quarterly; both payable December 1 to holders of record November 10.

Delaware & Hudson, $2.25, quarterly, payable December 20 to holders of record November 28.

Maine Central.—Preferred, 1¾ per cent, quarterly, payable December 1 to holders of record November 15.

New York, Chicago & St. Louis.—Common and preferred, $1.50, quarterly, both payable January 2 to holders of record November 15.

Trend of Railway Stock and Bond Prices

	Nov. 5	Last Week	Last Year
Average price of 20 representative railway stocks	72.43	70.50	60.05
Average price of 20 representative railway bonds	88.50	88.07	82.38

Railway Officers

Executive

D. C. Alford has been appointed president of the Hartwell Railway and **Louie L. Morris** has been appointed vice-president, both with headquarters at Hartwell, Ga.

H. B. Hull, whose election as vice-president of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of November 1, was born on March 11, 1870, at Chamois, Mo. After engaging in newspaper work at Hannibal, Mo., for several years, he entered railway service as a clerk in the passenger department of the Chicago, Burlington & Quincy at St. Louis in 1896. Mr. Hull entered the service of the Illinois Central as claim agent at McComb, Miss., in November, 1898. In 1901 he was transferred to Springfield, Ill., and was promoted to district claim agent, with headquarters at Memphis, Tenn., in 1904. He was promoted to assistant general claim agent, with the same headquarters, in 1905, and held this position until July, 1911, when he was transferred to Chicago. Mr. Hull was promoted to general claim agent on March 15, 1913, and continued in that capacity until November 1, 1921, when he was promoted to assistant to the president. He held that position until his recent election as vice-president.

H. B. Hull

J. J. Pelley, whose election as vice-president in charge of operation of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of November 1, was born on May 1, 1878, at Anna, Ill. He entered railway service in 1900 as a track apprentice on the Carbondale division of the Illinois Central. He was promoted to supervisor on the Indiana division in 1904, and in the following year was transferred to the Memphis division. He was promoted to roadmaster of the Louisiana division in 1908 and held that position until 1911, when he was transferred to the Tennessee division. Mr. Pelley was promoted to superintendent of the Tennessee division in 1912 and three years later was transferred to the Memphis division. He was promoted to general superintendent of the Southern lines, with headquarters at New Orleans, La., in 1917 and continued in that capacity until 1919 when he was transferred to the Northern lines, with headquarters at Chicago. In 1920 he withdrew temporarily from the service of the Illinois Central to engage in work with the Car Service Division of the American Railway Association at Chicago. He was subsequently appointed chairman

J. J. Pelley

of the Chicago Car Service Committee and manager of the Refrigerator Car Section of the Car Service Division, in which capacity he served until April 1, 1923, when he returned to the Illinois Central as general manager. Mr. Pelley held that position until his recent election as vice-president in charge of operation.

Elmer R. Oliver, whose election as vice-president in charge of traffic of the Southern, with headquarters at Washington, D. C., was announced in the *Railway Age* of October 18, was born on February 25, 1883, at Taylor's, Miss. He was educated at Jefferson Law School and entered railway service on September 1, 1898, holding various positions in local agencies for the Southern until January, 1906, when he was appointed traveling freight agent at Chicago. In September of the next year he was appointed soliciting freight agent at Louisville, Ky., and became chief clerk to the assistant freight traffic manager in March, 1910. He was appointed assistant general freight agent at Louisville on June 15, 1912, and on January 1, 1916, he was transferred to Washington, D. C., in the same capacity. In October of the same year he was transferred to Atlanta, Ga., and served continually as assistant general freight agent at that place until the termination of federal control in March, 1920, when he was promoted to general freight agent at Cincinnati, Ohio. In November of the same year he was promoted to freight traffic manager, Lines West, with headquarters at Cincinnati, and on April 15, 1921, he was elected vice-president at New Orleans. A short time thereafter Mr. Oliver was elected vice-president of the New Orleans & North Eastern, with headquarters at New Orleans, and in October, 1923, he was appointed freight traffic manager of the Southern at Washington, D. C. Mr. Oliver was serving in that capacity at the time of his election as vice-president in charge of traffic.

E. R. Oliver

A. E. Clift, whose election as senior vice-president of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of November 1, was born on October 15, 1869, at Urbana, Ill. He entered railway service as a call boy on the Illinois Central at Champaign, Ill. He became a brakeman on the Illinois division in December, 1888, and in June, 1891, was promoted to conductor. In April, 1892, he was appointed conductor on the Cleveland, Cincinnati, Chicago & St. Louis, but in February of the following year returned to the Illinois Central as engine foreman at the Champaign yards. Mr. Clift was promoted to yardmaster at Champaign in March, 1893. He was made a conductor on the Chicago district in September, 1894. He was promoted to acting trainmaster of the Illinois division in October, 1902, and in February of the following year was promoted to trainmaster of the Chicago district. Mr. Clift was promoted to superintendent of the Freeport division in February, 1905, and was transferred to the St. Louis division in January, 1907. He was promoted to general superintendent of the Southern lines in June, 1910, and held that position until May, 1912, when he was transferred to the Northern and Western lines. He was promoted to general manager on August 4, 1917. Under the United States Railroad Administration he served successively as assistant general manager and as general manager, retaining the latter position when the railways were returned to private operation on March 1, 1920. Mr. Clift was elected vice-president in charge of operation on April 1, 1923, and continued in that capacity until his recent election as senior vice-president.

A. E. Clift

R. L. Ettenger, consulting mechanical engineer of the Southern, with headquarters at Washington, D. C., has been appointed assistant to the vice-president, mechanical, with the same headquarters.

The general offices of the Cairo, Truman & Southern are now located in Kansas City, Mo., with the following officers: **J. H. Tschudy,** president; **Jay Tschudy,** first vice-president; **E. W. Tschudy,** second vice-president and superintendent and **Browning Fellers,** third vice-president and purchasing department.

Operating

W. H. Leonard has been appointed supervisor of passenger train service of the Chicago, Rock Island & Pacific, with headquarters at Chicago, a newly created position.

J. W. Hevron, whose promotion to general superintendent of the Southern lines of the Illinois Central, with headquarters at New Orleans, La., was reported in the *Railway Age* of November 1, was born in Spencer county, Ind., on February 23, 1880. He entered railway service as a telegraph operator on the Louisville, Evansville & St. Louis, now a part of the Southern, in 1895, and later served successively as agent, yard clerk and bill clerk. He was employed by the St. Louis, Peoria & Northern, now a part of the Illinois Central, as telegraph operator and yard clerk in 1899. He was promoted to train dispatcher on the Illinois division in 1900, and in 1907 was promoted to chief dispatcher. Mr. Hevron was promoted to superintendent of the Illinois division in 1913. He was transferred to the Springfield division in 1915, to the Tennessee division in 1919, and back to the Illinois division in 1920. He was transferred to the St. Louis division on April 1, 1923, and continued in that position until his recent promotion to general superintendent.

J. W. Hevron

J. P. Nash has been appointed trainmaster of the New Mexico division of the Southern Pacific, with headquarters at Carrizozo, N. M. **W. S. Ford** has been appointed terminal trainmaster, with headquarters at El Paso, Tex.

J. M. Parker, assistant trainmaster of the Spartanburg division of the Southern, Lines East, with headquarters at Spartanburg, S. C., has been promoted to trainmaster of the Charlotte division, with headquarters at Toccoa, Ga., succeeding A. P. Johnson, resigned. **A. E. Woody** has been appointed assistant trainmaster of the Spartanburg division, succeeding Mr. Parker.

A. E. Sweet, vice-president and general manager of the El Paso & Southwestern, with headquarters at El Paso, Tex., has been appointed assistant general manager of the Southern Pacific, with the same headquarters, with jurisdiction over the

new Eastern district which includes the Tucson division of the Southern Pacific and the Rio Grande and New Mexico divisions of the El Paso & Southwestern. The new Eastern district was formed on November 1 when the lease of the El Paso & Southwestern by the Southern Pacific, Pacific system, was put into effect. **L. U. Morris,** general superintendent of the El Paso & Southwestern, with headquarters at El Paso, Tex., has been appointed superintendent of the new Rio Grande division, with the same headquarters. The Rio Grande division includes all lines of both roads between Tucson and El Paso. **H. S. Fairbank,** superintendent of the Western division, of the E. P. & S. W., has been appointed superintendent of the new New Mexico division, with headquarters at El Paso. The New Mexico division includes the E. P. & S. W. lines east of El Paso to and including Tucumcari, New Mex., and the line from Tucumcari to Dawson. **William Wilson,** superintendent of the Tucson division of the Southern Pacific, with headquarters at Tucson, Ariz., continues in that capacity. The Tucson division includes all lines east of the Colorado river to and including Tucson and will later include the Arizona Eastern and the new lines to be constructed in Arizona. **W. B. Kirkland,** trainmaster on the Sacramento division of the Southern Pacific, with headquarters at Roseville, Calif., has been promoted to assistant superintendent of the Rio Grande division, with headquarters at El Paso. **C. D. Beeth,** superintendent of the Eastern division of the El Paso & Southwestern, has been appointed assistant superintendent of the Rio Grande division, with headquarters at Douglas, Ariz. **C. L. Zwick,** trainmaster on the Tucson division of the Southern Pacific, with headquarters at Lordsburg, Ariz., has been transferred to the Rio Grande division, with headquarters at Bowie, Ariz. **C. B. Eifort** has been appointed trainmaster on the New Mexico division, with headquarters at Tucumcari, New Mex.

G. E. Patterson, whose promotion to general manager of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of November 1, was born on June 23, 1869, in Marion county, Ill. He entered railway service in 1898 as a station agent and telegraph operator on the Illinois Central, and he served in this capacity until October, 1903, when he was promoted to division agent. In September, 1904, he was promoted to inspector of weights and in August, 1905, was promoted to trainmaster. Mr. Patterson held this position until July, 1913, when he was promoted to superintendent of the Springfield division. He was transferred to the Louisiana division in November, 1915, and was transferred to the Illinois division in October, 1918. He was promoted to acting general superintendent of the Northern lines, with headquarters at Chicago, in July, 1920. He was appointed general superintendent of the Northern lines, the position he held at the time of his recent promotion to general manager on April 1, 1923.

G. E. Patterson

Traffic

Grant Clapperton has been appointed general agent of the New York Central, with headquarters at South Bend, Ind., succeeding E. H. Potter, deceased.

B. Bigelow has been appointed assistant general freight agent of the Rutland, with headquarters at Rutland, Vt., a newly created position. **Joseph W. Porter** has been appointed district passenger agent, with headquarters at New York. **John A. Proctor,** traveling agent, has been promoted to general agent of the transportation and traffic departments, with headquarters at Rutland.

Brooks G. Brown, whose promotion to freight traffic manager of the Southern, with headquarters at Washington, D. C., was announced in the *Railway Age* of October 25, was born on December 2, 1880, at Decatur, Ga. He was educated at the Donald Fraser high school at Decatur and entered railway service on December 1, 1899, in the freight traffic department of the Southern. Mr. Brown remained in that department until the period of federal control when he was appointed assistant to the director of traffic of the United States Railroad Administration at Washington. At the termination of federal control Mr. Brown re-entered the service of the Southern as assistant freight traffic manager at Washington and remained in that capacity until the time of his recent promotion to freight traffic manager.

Mechanical

Thomas Paxton, superintendent of motive power of the El Paso & Southwestern, with headquarters at El Paso, Tex., has retired.

E. A. Koschinske has been appointed superintendent of the Scranton shops of the Delaware, Lackawanna & Western, succeeding J. R. Lancaster, resigned.

R. U. Lipscomb, assistant superintendent of motive power of the Southern Pacific, lines in Texas and Louisiana, has been promoted to superintendent of motive power of the new Eastern district, formed by the lease of the El Paso & Southwestern to the Southern Pacific, with headquarters at El Paso, Tex. **E. Gordon** has been appointed master mechanic of the New Mexico division, with headquarters at Tucumcari, New Mex. **W. G. Reid** has been appointed master mechanic of the Rio Grande division, with headquarters at El Paso. **M. L. Hull** has been appointed road foreman of engines of the New Mexico division, with headquarters at Tucumcari. **A. G. Newell** has been appointed road foreman of engines of the Rio Grande division, with headquarters at El Paso.

Engineering, Maintenance of Way and Signaling

H. E. Stansbury, resident engineer of the Eastern division of the El Paso & Southwestern, with headquarters at Tucumcari, New Mex., has been appointed division engineer of the New Mexico division of the Southern Pacific, with headquarters at El Paso, Tex. **F. L. Guy,** resident engineer of the Western division of the E. P. & S. W., with headquarters at Douglas, Ariz., has been promoted to division engineer of the Rio Grande division, with headquarters at El Paso.

Purchasing and Stores

L. G. Pearson, general storekeeper of the El Paso & Southwestern, has been appointed district storekeeper of the new Eastern district of the Southern Pacific, with headquarters at El Paso, Tex.

G. T. Richards, assistant district storekeeper of the Chicago, Milwaukee & St. Paul at Dubuque, Iowa, has been promoted to district storekeeper of the Southern district, with the same headquarters, succeeding J. E. Dexter, deceased.

Special

C. E. Smith has been appointed fire and safety inspector of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, a newly created position.

Obituary

J. M. Meade, formerly engineer of the Eastern lines of the Atchison Topeka & Santa Fe, with headquarters at Topeka, Kan., who retired from active service on June 1, 1919, died in Topeka on October 31.

E. M. Hyzer, formerly vice-president and general counsel of the Chicago & North Western, and the Chicago, St. Paul, Minneapolis & Omaha, who left railway service in 1917, died at Ballston, Va., on October 31.